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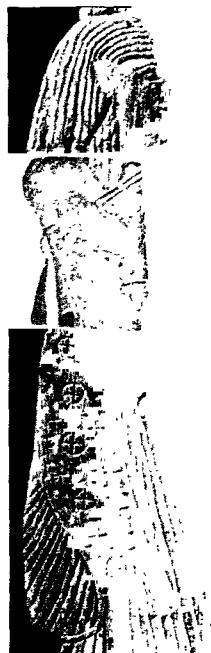
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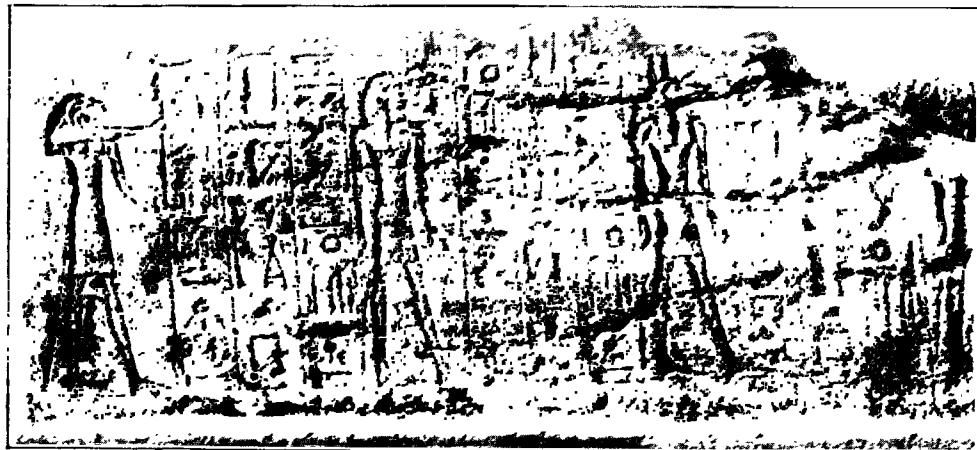
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END OF SARCOPHAGUS OF PA-RAMESSU.

AT THE LEFT HAND SEE THE CARTOUCHE AND *NEB UBEN* NOT ON ERASURE. TO THE RIGHT ARE THE EARLIER CARVINGS OF PA-RAMESSU WITHOUT CARTOUCHE AND *NEB UBEN* OVER ERASURE.



HEAD OF WORSHIPPER. PTOLEMAIC STELE ABYDOS.

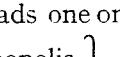
ANCIENT EGYPT.

THE TREE OF THE HERAKLEOPOLITE NOME.

(Concluded.)

LET us now consider the subject from a botanical point of view. The species *Raphia*¹ is characterised by large pinniform pinnate leaves, surpassing the trunk in size. The trunk is so short in proportion that Wurming writes of "the almost stem-less *Raphia*-palms" (*Lehrbuch d. ökologischen Pflanzengeog.*, 1918, p. 616).

In this it differs from the tall-stemmed slender species, mainly of date palms. In accordance with the *Raphia* is the determinative showing a short stem and a strongly developed crown of leaves. Agreeing with this is Dümichen's view quoted by Moldenke (*Alt. texte erw. Bäume*, p. 63) that "dieser Baumname, wenn auch nicht die Dattel palme, so doch möglicherweise eine andere Palmenart bezeichnen könne, vielleicht die Zwergpalme. Mit Bezugnahme auf die dem Worte *ām* auch zustehende Bedeutung 'das Kind,' 'die Kleine' (Brugsch, *Worterb. Supp.*, *ām*, p. 64), determiniert durch das Bild des Kindes) wurde der Zwergpalme gegebene Name 'Die Kleine' eine durchweg entreffende Benennung gewesen sein."

Such a surmise is rather dangerous, as it leads one on to another possibility. May this be connected with the name of Herakleopolis              <img alt="Egyptian hieroglyph for a person" data-bbox="10

Besides the short stem the Raphia is especially characterised by the enormous drooping inflorescence. The length of this is about one metre, and is the more conspicuous by the stem being less than a metre and a half high. Compare Fig. 11 with Fig. 1, where the spadix has already passed into a drooping inflorescence.

This change is more marked in the Tehneh example (Fig. 10). Before going further we should consider why the Raphia is not figured with an obviously large spadix. There might well be representations of the wine-palm without inflorescence, merely as a short-stemmed palm, such as that on a seal of Sakham-ab-Perabsen (*Royal Tombs*, II, xxii, 189) Fig. 16, and the palm in the name of the princess Bener-ab (*R.T.*, II, iii, 1) which might equally read Ama-ab, Fig. 12.

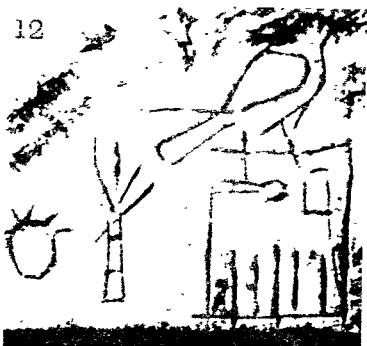
Raphia is monœcious, the spadix having both male and female flowers, in separate bracts of the same branch, see Raphia Ruffia in Fig. 14. In this 1 is a blossoming branch, female flowers below and male above; 2, two female flowers half covered by the theca-form bracts; 3, male flowers with bract and first leaf; 4, seed, back; 5, seed, section; 6, branch with ripe fruit, and flowers below. (Engler and Prantl, *Pflanzenfamilien*: 6 also in Maout et Decaisne.)

It should be noted that the sheath-like bracts in which the flowers lie, are like the perianths often figured in the New Kingdom (Günther Roeder, *Blumen der Isis*, Zeits. 48, 1910, pp. 115-123). They appear as determinatives of *más*  (Levi, *Vocab.* 2, p. 272, "mazzo di fiori, collane di fiori, che entrano l'uno nell'altro")  (Budge, *Dict.*, p. 287) and  *más* "bouquet, bunch of flowers."

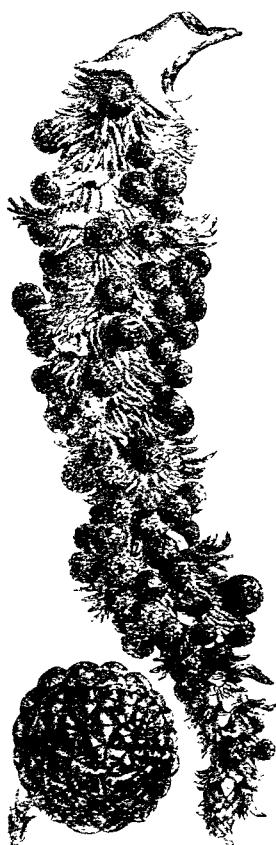
There may be some connection between the form of the seed of Raphia, and the "fruit d'un palmiste indéterminé" carved in green stone, found in the Aha tomb (De Morgan, *Tombeau de Négadeh*, Fig. 714). On the offering table of Sarenput, son of ati-hetep, there is an indistinct figure which might be connected with Raphia (De Morgan, *Cat. Mon. Haute Eg.* I, 1894, p. 155).

It may be compared with the fruit-bearing spadix of *Raphia vinifera* in Fig. 13.

Thus we see various grounds for the supposition that the tree of the Herakleopolite nome was wine-palm or *Raphia*. The correctness of the reading *amā* in place of *nir* is in accord with de Rougé reading *am-khent*, and Brugsch *am-khnti* and *am-p̄wru* (*Aegyptologie*, 447). The wine-palm also satisfies the condition that it must have been known in Egypt in the earliest period. The



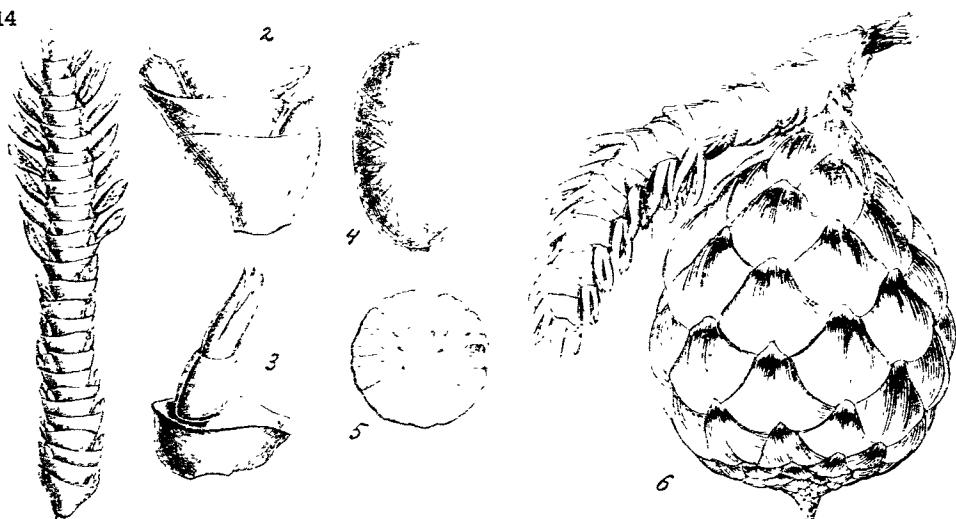
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12. PALM OF BENER-AB.
13. SPADIX OF RAPHIA VINIFERA.

Pyramid Texts, which descend from remote ages, and which have but few tree-determinatives, yet name the *dmā* palm among the palm-wines. There was already some confusion in determinatives, see Teta 334, or Pepy 826 and Meryra 249 and 704 (Sethe, *Pyramidentexte*, 1908, 380). In Pepy, 826, the determinative is the same as the sycomore   . In Meryra 113, "the wine-palm follows"        , this figure is a short-stemmed tree with thick foliage. This palm-wine, well known in later lists, occurs also in the pyramid texts, as in Teta 120 a       (Sethe, P.T. 55).

The nature of palm-wine should be noticed, as some confusion has arisen between the true palm-wine and that fermented from dates. The true palm-wine is obtained from the sap of various species, drawn by incisions in the spadix, or the head, or by cutting off the spadix. The sap, collected in a very primitive manner, is fermented to produce wine. In Mesopotamia this sap-wine was

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14. FLOWERS AND FRUIT OF RAPHIA RUFFIA.

collected from the date-palm, but in ancient Africa this was probably not the case. It seems probable that the date palm became more valued for fruit, the sap-wine was only drawn from other species; and this may have tended to exterminate these in the northern habitat.

The use of dates for wine, was like that of other fruits; the ripe fruit was mashed with water, pressed or boiled, and then fermented. To avoid confusion it is best to call this date-wine, as in Egyptian      (Ebers Pap, x, 2; Pliny xiv, 9; Wiedemann, *Herodots zw. Buch*, 355). The true palm-wine *arp-amā* constantly recurs in lists of offerings, along with *arp mh*, *arp absh*, *arp ami*, *arp snw* and *arp h̄m̄w*. The reading "wine of Buto" for palm-wine originates from Brugsch; but as Bollacher remarks (Pliny xiii, 9) this seems groundless. It is, however, evident that when Raphia was extinct in Egypt (save in a few oases) the name of palm-wine might be extended to other products of palms.

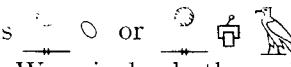
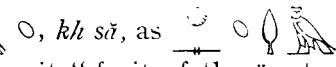
As the palm-wine was the refreshing drink from the sacred tree of Herakleopolis, so the palm-cabbage was also valued in Egypt as a food. This terminal bud and leafage, otherwise called the "heart" or "brains" of the tree, was taken from many different species, and probably also from the wine-palm. It has a sweetish taste, was much appreciated anciently, and is still sold as a dainty in Cairo. Regarding the name of the palm-cabbage Moldenke (*Altaeg. Texte*, 55) supposes that the name was "Blättenwerk der Dattelpalme," or elsewhere (p. 64) "Blätter¹ oder Blatt spitzen." Joachim (Pap. Ebers. Berl. 1890) rendered as "Zweige vom äm-Baume." But it is possible that we should read this as the leaflets of the large penniform compound leaves of the wine-palm, or as the same leaflets of the date-palm, rather than the palm-cabbage.

For Moldenke renders "Flower of the *amā* palm"; but this seems unlikely, and it might rather mean the living part of the tree, the so-called palm-cabbage.

may also be written , determined by an ear, or shell-shaped organ, which is found in various plants as well as in the palms. In the Hearst papyrus (Reisner, 1905, xiv, 14, to xv, 1) is rendered by Wreszinsky "sycomore seeds, napeca seeds, *amā* tree seeds, acacia seeds." (*Lond. Med. Pap. und Pap. Hearst*, 1912, p. 125). Reisner read as "leaf" of a plant "written either with or without the determinative applying to the expressions as a whole" (*Hearst pap. vocab.* pp. 14 and 17). Perhaps both renderings may be partly right. should probably not be read here as *ad* but as *onkh*, according to the Berlin medical papyrus, where is given in full (Wreszinsky *Med. Pap. Berl.* V, 4, 5; and p. 10). On the other hand if we accept Reisner's view and suppose that this represents a leafy organ, resembling an animal's ear, and hence resembling the sheath of a palm enclosing the spadix, it would be inapplicable to the sycomore or acacia. Hence, I conclude that it simply means "buds," shaped like an ear, out of which the life of the plant emerges. This would apply equally to the terminal bud of the palm or buds of an acacia. The would then be the palm-cabbage of the date palm.

Another difficult term to define is the , or , an organ thus found in such different trees as the palm and the vine, the sycomore and the napeca (Wreszinsky, *Lond. Med. Pap.* 10059, in Pap. Hearst I, 14). Various renderings of *ashed* have been proposed, apricots (Murray), *Cordia Myxa* (Dümichen, Loret, Moldenke), *Balanites* (Maspero), grapes (Reisner); and later it seems to be a general term for a fruit or group of fruit. [It might well mean simply "gathering" or "fruit" in all cases.—ED.] Thus, I propose to read *ashdt nt ams*, clusters of fruit of the wine-palm.

¹ As also Wreszinsky in the case of willow leaves (*Grosse med. pap.* 3038, 1909, 7, 12).

Another general term is  or , *kh sā*, as , *khsā-n-amū*. Joachim and Wreszinsky both render it "fruit of the *ām* tree." It has probably a wider meaning as core, or kernel of a large size. The terms of botanic morphology in Egypt will need much research before they are fully understood.

To return to the palm-cabbage, Woenig calls it a "very excellent vegetable," obtained by the Egyptians from the so-called "brain of the palm, that is from the young, tender and juicy shoots of the leaves" (*Pflanzen in alten Aeg.* 1886, pp. 221 and 312). Though usually precise, this writer here states no more than did the ancients. It should be noted that it is not found in the lists of offerings, but no more are many other vegetables. Maspero remarked in 1897 that no vegetables are specified except onions, but they are only included in some general rubric at the end. On the other hand there are many figures in sculpture which seem to be palm-cabbage.

These have been taken for artichokes by C. Pickering (*Races of Man*, p. 371); but F. Unger¹ doubts this "Wenn von allen diesen Darstellungen etwas für Palmenkohl in Anspruch genommen werden könnte, so wären es nur Fig. 27 und 28, die allerdings von den übrigen bedeutend abweichen. Aehnlich erscheinen in den ägyptischen Alterthümern die Darstellungen der Blüthensträusse, von welchen ist die Artischoke nur durch den meist gekrümmten Stiel und durch den Mangel der Ringelung, was bei den Straissen den Bindfaden andeuten soll, zu unterscheiden weiss." As far back as 1834 Rosellini (*Mon. civ.* p. 388) had recognised the palm-cabbage at Beni Hasan (see Leps., *Denk.* II, 129). Unger takes this figure to be *Raphanus sativus (major)*, horse-radish, "Die nach oben erweiterte Wurzel trägt Narben von entfernten Blättern, von denen die innersten und jüngsten noch in einem Buschel vorhanden sind. Allerdings spricht das mehr für *Beta* als für *Raphanus*, allein für *Palmenkohl* am wenigsten." The latter words, which I italicise, are a notable opinion from so serious and accurate a botanist as Unger. I never met with a *Raphanus* or a *Beta* bearing leaves up, or nearly up, to the top of the root. Schweinfurth doubted the appearance of *Raphanus* in ancient Egypt.² The reference to an inscription on the pyramids by Herodotus must be taken with all reserve as to what he was told by others, however accurate his own observations may be. Loret takes the figures named above to be *Lactuca sativa*,³ and Schweinfurth and Buschan⁴ agree with this. These figures are but exceptional; and in my opinion those published by V. Bissing (*Gem-ni-kai*, xxvi) and Reno Muschler⁵ are by no means *Lactuca*.

In other cases there may, perhaps, be figures of unnoticed species; but the older interpretations—such as pine-cones—must be set aside. We return now to the question about artichokes. Woenig is surprised at De Candolle doubting about Egyptians having *Cynara scolymus*, or its prototype *C. Cardunculus*; but he after all doubts whether *C. Scolymus* was known in Egypt. It is almost certain that the south European *C. Cardunculus* is the prototype of *Scolymus*.

¹ In *Botanische Streifzüge auf dem Gebiete der Cultur-geschichte*, Sitz. Kais. Ak. math.-natur., Classe I, die Pflanzen des alt. Aeg. 38, pp. 69-140.

² In *Ver. Berl. Anthropol. Ges.* 1891, 665.

³ *Flora Phar.* 1892, 68, No. 113.

⁴ *Vorgeschichtliche Botanik* 1895, 144.

⁵ *Erläuterungen an den Pflanz.* 41.

Originally the hard and unpalatable flowers of *Cardunculus* were used as food. The artichoke proper was described by Theophrastus, who reminds us of the resemblance between the thalamus and the palm-cabbage. This, however, is much later than the Egyptian figures. The spread of the artichoke was very slow; in 1466 from Naples to Florence, and not till 1548 to England (H. Phillips, *Hist. Cultiv. Veg.* I, 23); but there is no reason to expect it in early Egypt. We may, indeed, meet in reliefs with plants which we cannot determine, because of imperfect execution, especially in provincial art; moreover, the figures are often damaged. Again, repeated copying, regardless of the original subject, may cause wide divergence. We must therefore be cautious, and restrict ourselves to comparisons of repeated forms which are not very divergent. Any wide deviation must be specially considered. As Schweinfurth remarks, "Il faut une profonde



15. RAMES SEATED HOLDING A BOUQUET OF LEAVES.

connaissance du style égyptien, de la symbolique figurée et des plantes du pays pour être à même de bien interpréter la signification de ces images. De plus, c'est une tâche qui doit être supportée autant par le savoir que par la critique. Il s'y agit parfois de reconnaître, parfois de deviner. La détermination d'une plante comme espèce est souvent déjà difficile quand on a sous les yeux une gravure de nos jours, elle l'est bien plus lorsqu'il s'agit de dessins aussi grossiers que ceux de la sculpture" (G.S. *Flora phar.* Bull. Inst. Eg. 1882, No. 3, p. 9).

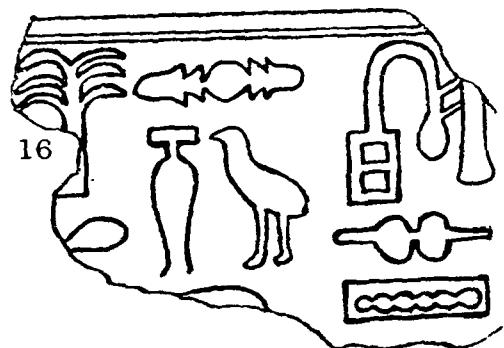
We should therefore restrict our field to the regularly recurring forms, which have only slight divergences from a normal type. Any considerable or strange deviations must be carefully considered. When we look thus critically at the artichoke resemblance, we see that it is impossible, and only two sources seem likely, an artificial bouquet of leaves, or else the palm-cabbage. As against the bouquet, we see that such are either straight or curved. For instance,

Khay seated before Rames (Fig. 15) holds in his left hand a bouquet of leaves. [This is generally accepted as a palm spathe.—F.P.] Something similar but very primitive is seen from Hierakonpolis (Quibell, *H. xlvi*, 1), where the leaves are reduced to a few lines. In the mastaba of Gemnikai (Bissing, *Mast. Gem. 2*, pl. 1) one of the offering bearers is preceded and followed by a man carrying a palm-cabbage in the left hand (Fig. 17). Bunches of flowers or leaves tied together are sometimes placed in the graves, as that of Nekht-ef-Mut at the Ramesseum (Quibell, *R. xvii*, 10). Leaf-bouquets are sometimes figured in the New Kingdom, as in Lepsius, *Denk.* III, 236A; VI. 123A, 78, which latter Unger describes as a bouquet wrapped in a leaf. There are many representations of the palm-cabbage, and probably in the Old Kingdom they already knew of various species, and perhaps indicated them in figures.

As early examples of the palm-cabbage see the fine steles in Leyden of Khu and Antefaqer (Boeser, *Beschrijving . . Eg. Versam.*, pls. xxix, xxx; ii) Also those of Upuatu-a (pl. iv) and Upuatu-nekht (pl. xxviii). Earlier instances are at the tomb of Ti (Steindorff, *Grab des Ti*, 37), and that of User-neter (Murray, *Saqq. Mast.* xxiii), while it appears later at Deir el Bahri (Naville, *D. B. I*, xv).

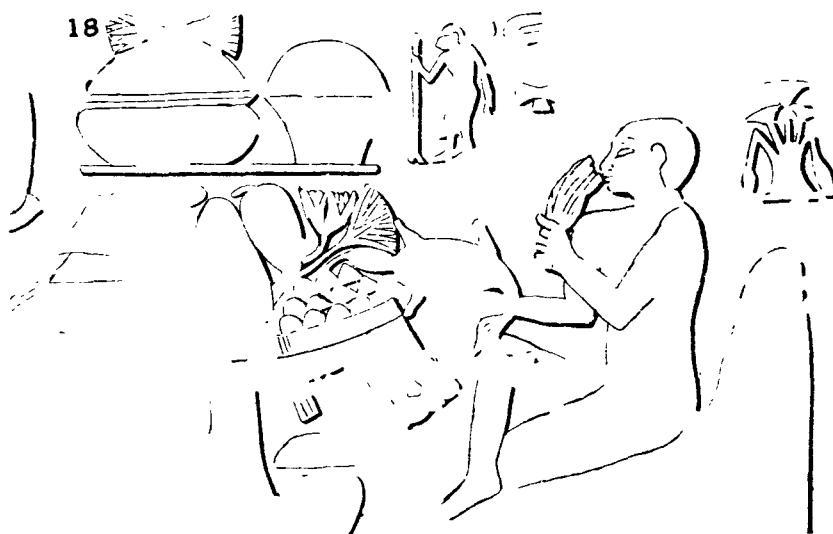
Far the greater number of so-called "artichokes," on the funeral offerings, undoubtedly represent palm-cabbage. At least one relief may be quoted, from the tomb of Akhet-hetep (Davies, *Ptah-hetep and Akhet-hetep*, xvii), where the man is seated with food before him, eating the palm-cabbage (Fig. 18), in a way which clearly proves that it is not an artichoke. We may note, by the way, that the palm-cabbage was never used to make palm wine, as Scheil has supposed. (*Tombeaux Thébains*, V, p. 562.)

I have tried to point out the probability that the tree of the Herakleopolite nome is a wine-palm, *Raphia Monbuttorum*, which has since then retreated southward. It has doubtless kept its place longest where the conditions were more favourable, and a warm air and soil gave a damp atmosphere. Among such sites are particularly the Oases. In support of these views there is a statement by Sethe (*A.Z. Ivi*, 44-54) that the "field of *aām* trees" is not a special oasis but a general term for the Oases (p. 52), as sources of palm wine, defined thus in the Edfu text, "he brings to thee fields of *aām* palms, making intoxication with its wine." (De Rouge, *Ins. Edfu*, II, 99, 14.)



16. PALM ON SEALING, IIND DYNASTY.
17. PALM-CABBAGE CARRIED.

I cannot leave the subject without disclaiming any special study of the archaeology, as my work has been widely apart from Egyptology. Having been for more than twenty-five years in practical botany, especially agricultural, an investigation of the ancient botanic material of Egypt brought me into contact with Dr. Boeser, who has revealed to me the civilisation of the Pharaohs. The interest once aroused was unquenchable, for the Nile has an irresistible attraction ; and my own subject gave material enough to stimulate research. I soon realised that the application of physical science to Egyptology demands a knowledge of both sides, especially in the language and literature. On the other hand, I would emphasize that the philologist requires sufficient scientific acquirements



18. MAN EATING PALM-CABBAGE.

to follow the physical side of his subject. This, however, does not diminish our gratitude for what has been done by great scholars in Egyptology. The domain of this science has gradually become so wide that it is nearly impossible to deal with all aspects of it, as is likewise the case in other sciences. We cannot work now without specialising, in order to obtain a critical interpretation of the material, and to render the structure of the subject not only wider but more substantial. It is desirable then that not only philologists but medical men, agriculturists, botanists, and other technical students who feel the charm of our historic knowledge of ancient civilisation, should acquire the necessary view of this subject, which will prove not only instructive but fascinating in its scope.

F. F. BRUIJNING.

THE SARCOPHAGUS OF PA-RAMESSU FROM GUROB.

WAS HE THE HEIR OF SETI I?

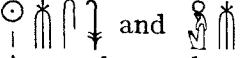
THE red-granite sarcophagus found by the British School of Archaeology in Egypt in the season 1919-20 has a somewhat curious history. Photographs of the sarcophagus and cover, now in the Cairo Museum, together with the plan of the tomb and full description, are being published in the forthcoming volume of the School, entitled *Gurob 1919-1920*; a summary description will therefore suffice here to introduce the question of the identity of the prince.

About twenty-eight years ago eight men worked out a large shaft at Gurob and discovered, on reaching the burial chamber, that it was flooded, the mummiform lid of a very large red-granite sarcophagus only being visible above the surface. A Greek antiquity dealer was summoned to see this cover, and he offered £50 if it could be broken into sufficiently small fragments to make it transportable. The finders broke off the head and part of one arm, and, from what I can hear, got it to the surface. The secret of this find had, however, leaked out by this time, and the party of eight had become forty, all eager for a share in the loot. A fight ensued, and finally the affair was given away to the then Inspector of Antiquities of the district, who arrived on the scene, seized the lid, and in due course sent it to the Cairo Museum, where it was registered as No. 30707 "4^eme fils du roi Rameses II." There it has remained ever since, until recently fixed up against a wall.

The knowledge of the position of the pit seems to have been completely lost, and we had to take the largest and most prominent pit and chance our luck. The first pit proved to be the one, and we found the plan closely resembled the royal burials in the Tombs of the Kings at Thebes. After bucketing out the water in the chamber and clearing out the rubbish from the tomb we were surprised to find the sarcophagus was represented as being on a sledge, coffin and sledge being in one piece. The inscriptions on the sarcophagus present no special peculiarities, except in the spelling of the name of the owner, who is called Pa-Ramessu and Ramessu, and whose titles are "Royal Son," "Vizier," "Hereditary Prince of the Lord of the Two Lands" and "Commander of the Bowmen."

The name of the prince is written in various ways, an analysis of the name showing the following peculiarities,  (and variants) always and only for the titles "Vizier," "Hereditary Prince of the Lord of the Two Lands" and "Commander of the Bowmen"; (never with "Royal Son")

 with "Royal Son" but with no other titles.

 and  with "Royal Son" or without title.

As we have already remarked, in whatever form the name occurs, the epithet  has been added.

Apart from the title "Royal Son," the other titles occur each singly and in combination, the title of "Commander of the Bowmen" where in combination never being in the first place. Otherwise, we have been able to recognise no system in the arrangement of the titles.

The title "Royal Son" never occurs with any other title, except the added "Neb Weben."

We believe that this prince cannot be the 4th or any son of Ramessu II for the following reasons:—

While admitting that *Sa nisut* (Ramessu-mer-Amen) can mean "Royal Son of Ramessu," in this case it cannot be so, as no name follows the cartouche although this phrase occurs seven times, so that it cannot be a chance mistake. We should, therefore, read it Royal Son (Ramessu-mer-Amen), and recognise in it a prince, entitled to use the cartouche, which happens to be identical with the personal-name cartouche of Ramessu II. Further, each cartouche, and in consequence each name on the sarcophagus, has been altered to render it different from that of Ramessu II by the addition of the phrase *Neb Weben*. Who then would object to a cartouche exactly similar to his own but Ramessu II? "If Ramessu objected to anyone having his cartouche, (or in any case,) he would not have permitted one of his sons to take it.

Since Pa-Ramessu was not the son of Ramessu II, his actual identity must be determined. We cannot put him after Ramessu II as: (a) We have practically no graves after that date at Gurob; (b) No one after Ramessu II would care if his cartouche resembled that of Ramessu II or not; (c) The style of work on the coffin and the objects are all characteristic of the late XVIIIth—early XIXth dynasties, and (d) There is no position into which we can fit Pa-Ramessu after Ramessu II.

It seems that the fact of the name being written in a cartouche should give the key to this puzzle. In the full publication of this tomb, we shall give a list of all the princes of the XVIIIth to XXth dynasties with their most important titles. Under the heading of "cartouche" will be found the number of times the name of the prince is written in a cartouche as a fraction of the total number of times the name occurs. These are all taken from Gauthier's *Livre des Rois*, II and III. The kings entitled "Prince of Egypt" from the Kheta Treaty will be omitted.

From this table it will be seen that from Thutmose III until the end of the XXth dynasty, every prince whose name is known written in a cartouche became king; in other words, was the heir. The only exception being that of Ramessu-kha-em-Wast, son of Ramessu III. Even this can be easily explained by the fact that his name is a combination of the family name Ramessu and should be grouped among such names as Men-kheper-Ra-senb, etc. The rule then seems absolute that the name in the cartouche indicates the heir. It may be noted that in the 37 times the name of Kha-em-Wast, an admittedly favourite son of Ramessu II, occurs, in no case is the name found written in a cartouche, although he has all the most important titles.

As to the title "Hereditary Prince of the Lord of the Two Lands," although we have not been able to find another example, those borne by Horemheb before his coronation (*Livre des Rois*, Gauthier, II, p. 384), Merenptah and Sety II are of practically the same meaning.

We have, therefore, a prince, heir to the throne, before the time of Ramessu II, with a cartouche exactly resembling his, changed probably by him, by the addition of an epithet. We suggest that we have here a son of Seti I and an elder brother of Ramessu II or at any rate the heir of Seti I, who died before Ramessu II's succession. Whether this is the prince (or one of them) whose figure was introduced into the Karnak reliefs of the wars of Seti I, and whose figure was changed to that of Ramessu II, is not certain. As regards titles, it is *possible*. That the prince in question is Amen-nefer-neb-f, as held by some, is at least a doubtful supposition, the only foundation being the possible presence of a *neb* after the name, and the fact that he has the title "First Royal Son of his Majesty." This title goes for very little, as it occurs with *two* of the sons of Ramessu III and even in the titles of the non-royal Amen-nakht, son of Amen-kem-s (*Livre des Rois*, III, p. 397), each of whom has the title "Chief Royal Son"; neither is it of first importance, as Amen-her-unem-f, son of Ramessu II, only uses it once in the three times his name occurs.

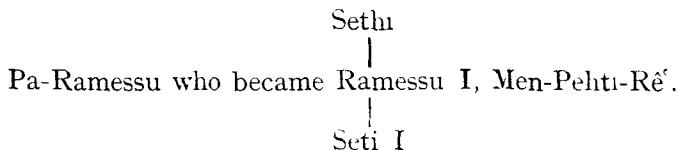
The titles of the unknown heir (?), according to Gauthier, are:—

- (1) Hereditary Prince and Mayor (*Erpa'-hati'*)
- (2) Chief Royal Son of his body.
- (3) Fanbearer at the Right of the King.
- (4) Royal Follower into Retennu.
- (5) Royal Scribe.

In examining the titles of those princes whose tombs are known, one is struck with the fact that the military titles shown in great detail on the temple lists are nearly absent from the tombs (*cf. Livre des Rois* III, pp. 176, 177). Of the titles of the unknown prince set out above, Numbers 3, 4, and probably 5 were of a purely military nature and might well have been omitted in the tomb or on the sarcophagus. As to the title "Of his body," one has only to look through the titles of the princes to see how unimportant it was considered except among the lesser known sons. For example, Merenptah, in styling himself  omits altogether the phrase "Of his body" after the words "Royal Son," although he is known to have this title.

From this we see that, as regards titles, Pa-Ramessu *could* be the unknown prince. We do not insist on this, but he seems to have been undoubtedly the heir to the throne.

Legrain, in the *Annales du Service*, Vol. XIV, pp. 17-26, discusses two statues (now at the Cairo Museum), found by Pylon X at Karnak in 1913, of a person called Pa-Ramessu, son of Seti. He suggests that this man became Ramessu I, and I believe that this is now generally accepted. Assuming Legrain's hypothesis and ours to be correct, we have the following sequence:—



Pa Ramessu also called Ramessu and Ramessu-mer-Amen.

The Gurob Pa-Ramessu and King Seti I, each being named after his grandfather, a common Egyptian custom. The Gurob Pa-Ramessu may have retained

the alternative spelling, and his titles of "Vizier" and "Chief Bowman" on his coffin, in honour of his grandfather; the slight change of the Prince (*erpa'*) of the whole land into the Prince (*erpa'ti*) of the Sovereign being due to the royal birth of the grandson.

A list of the titles of the Karnak Pa Ramessu, with those of the Unknown Prince of the Karnak reliefs and the Gurob Pa-Ramessu, is not without interest.

Karnak Pa Ramessu.	Unknown Prince.	Gurob Pa-Ramessu.
1. <i>Erpa'</i> of the Whole Land.	<i>Erpa'-hati</i> ¹ .	<i>Erpa'ti</i> of the Sovereign.
2. Vizier.		Vizier ¹
3. —	Royal Son.	Royal Son.
4. —	Chief Royal Son.	—
5. —	Chief of his body.	—
6. —	Royal Son of Kush.	—
7. Royal Fanbearer.	Royal Fanbearer	—
8. Commander of Bowmen		Commander of Bowmen.
9. Royal Scribe	Royal Scribe	—
10. —	Royal Follower into Retennu.	—
11. Royal Groom		
12. Royal Charioteer		
13. Chief of the City		
14. Ambassador		
15. Judge		
16. Chief Canal Engineer		
17. Chief of Fortifications		
18. Chief Priest of all the Gods		
19. President of Council		
20. Royal Acquaintance (?), etc.		

It shows the great resemblance between the elder Pa Ramessu's titles and those of the Karnak Prince and the Gurob Pa-Ramessu.

Numbers 3, 4, 5 and 6 are almost exclusive to Royal Princes, but Pa Ramessu has both the titles Royal Fanbearer, Royal Scribe, and Royal Groom, so often held by the Princes. As to Number 10, Pa Ramessu could not have held it, as it only dates to Seti I's wars. The remainder of the Karnak Pa Ramessu's titles are those of a great soldier and statesman, but are not usual in the titles of Royal Princes. It is curious that the Karnak Prince omits the title of Chief Bowman and Vizier. Limit of space on the wall may well account for this as he is sure to have had many more titles. Another and more probable reason is that, assuming he and the Gurob Pa-Ramessu are one and the same, he would not insert non-royal titles on a temple wall although he may have had reasons for doing it on the sarcophagus.

As to the significance of the epithet *Neb Weben*, we have to take refuge in conjecture. Assuming the genealogy stated above to be correct, it seems possible that the Gurob Pa-Ramessu, on being declared heir, had taken for his personal cartouche the name that Ramessu II wanted after his death. Deciding to take his elder brother's name, his instinct, from what we know of him, would be

¹ This is the only case I can find where a Royal Son has the title of "Vizier."

to cut out the cartouches of the heir. Here we may see the restraining influence of the friends of the late prince whom Ramessu II, so early in his reign, would not risk offending. The conversion of the cartouche into a laudatory phrase by the addition of a word like *nakht* or *senb* would have been almost as bad, and the party of the prince would have been even more incensed at his cartouche being used to praise the younger heir, who probably hated him. It seems, then, within the bounds of possibility, that the epithet *Neb Weben* was added with an ambiguous intent, perhaps conferred posthumously, ostensibly as a title of honour and meaning "Lord of Brilliance," Ramessu II trusting to posterity to read it as Ramessu (II) is the Lord of Brilliance. This may be far-fetched, but we can suggest no other to meet the facts. If we are right, it is a subtle move well in keeping morally with what we know of the character of Ramessu II.

We are unable to comment on the reason why Pa-Ramessu was buried here at Gurob, as we have not sufficient data as to the burials of the XVIIIth—XIXth dynasty princes, to say if it is unusual. Gurob is possibly near his personal estates.

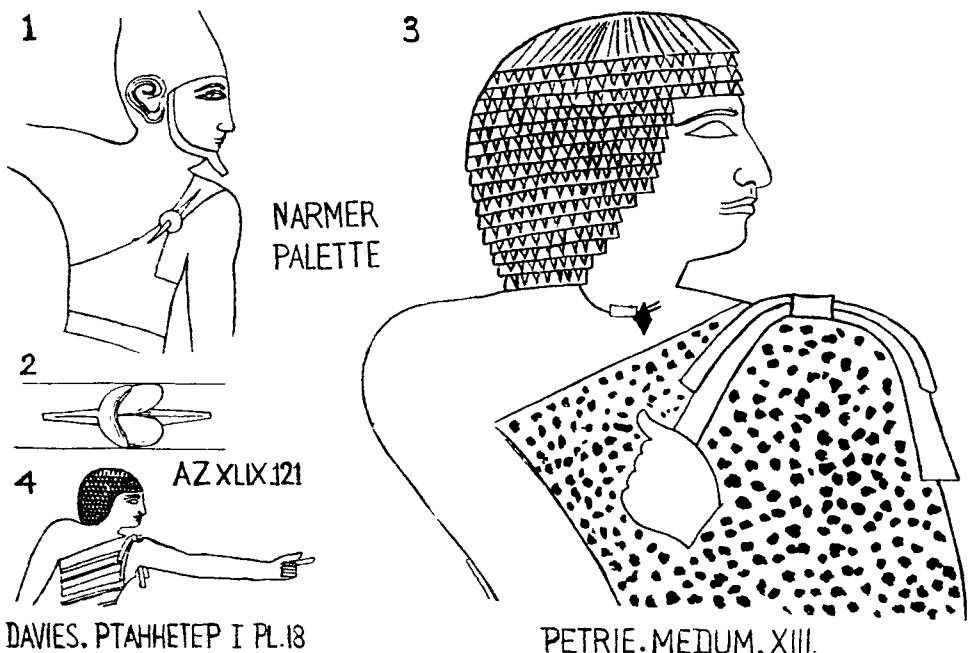
R. ENGELBACH.

[The history of the sarcophagus appears to be that it was engraved for the king's son Pa-ramessu *mäokheru*, without cartouche. The lid was finished and all of the body but one panel. Then, either on his becoming co-regent, or his accession, in the remaining panel the name was put in a cartouche with *neb uben*, not over an erasure. On the other parts the *mäokheru* was erased, and *neb uben* substituted. On the lid there was space enough to add, down each side of the middle band, a fresh column with the name in a cartouche and *neb uben*. On Ramessu II succeeding he adopted his brother's cartouche, which enabled him to appropriate any monuments already erected; he denied to him burial with the kings, and erased all trace of him.—F.P.].

KNOTS.

THE Egyptians of the early dynasties seem to have been averse to making representations of knots. In the Old Kingdom knots are hardly ever seen, and it is only in the Middle Kingdom that the reef-knot first appears.

Various devices were used for fastening ropes on boats, such as lashing with the loose end tucked in. Strings for garments and personal ornaments must have been tied in some way, but the knot is either not shown or is conventionalised out of recognition. As the Egyptian artists, in both the Old and Middle Kingdoms, were accurate in their detail, we can only suppose that these subterfuges were intentional, and were due not to incapacity on the part of the artist to represent so small an object but to some religious or superstitious feeling in representing a knot which could never be untied.



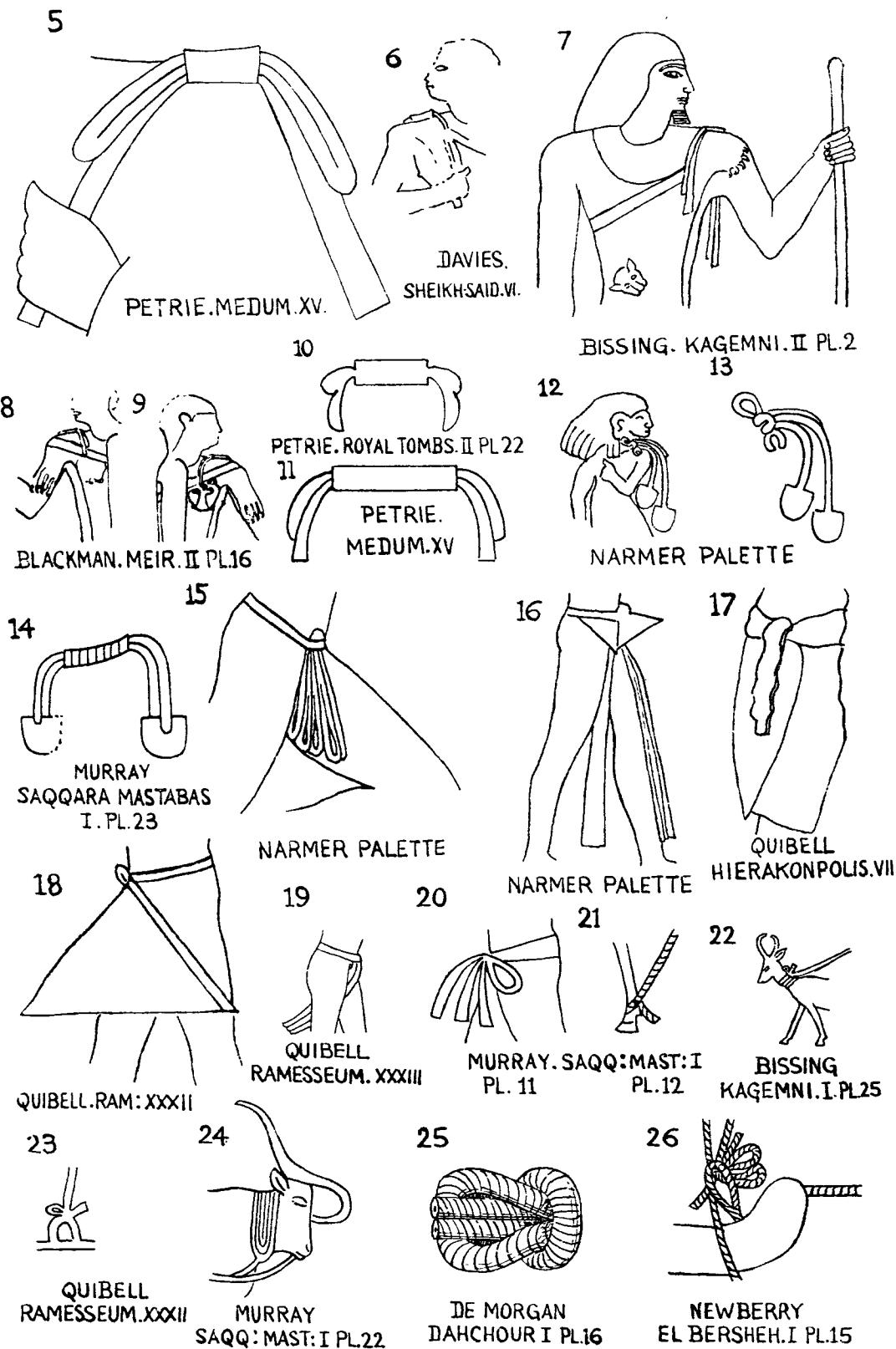
The earliest examples of the fastening of garments are on the slate palette of Narmer. No. 1 shows the fastening of the curiously shaped garment worn by the king. A piece of the garment is brought over the left shoulder and meets on the left breast another piece which comes from below the right arm. It is uncertain whether the fastening is a conventionalised knot, or whether it represents, as Montet suggests (*A.Z.* xlix, pp. 120-121), a kind of leather fastener (No. 2), which developed into a metal ornament in the Middle Kingdom. As the Narmer example is the earliest known, and as the shape of it does not correspond with Montet's suggestion of the method by which the fastener was held in place, it seems likely that Narmer's garment is knotted, and that the conventionalised knot of the early periods was imitated in the late Old Kingdom in leather or other material.

When a garment was fastened on the shoulder, it appears to have been tied there with four strings, as in No. 3, the huntsman in the tomb of Ptahhetep. Another form of shoulder-fastening was used only by priests of high rank, for it is the method of tying on the panther-skin. This is seen in No. 4, Rahotep seated at a table of offerings and dressed in a spotted robe to imitate a panther skin. The detail of the tie is perhaps more clearly shown in another figure of Rahotep, No. 5, where he holds one end of the tie in his left hand. This attitude is seen again in the figure of Urarna I (No. 6), who holds the long end in his hand; he also wears a panther skin. In the case of Gemnikai (No. 7), the details of the fastening are not given. Two similar figures (Nos. 8 and 9) clothed in panther skins and with the tie on the shoulder are of Ukh-hotep, and show that this portion of the priest's ritual dress continued into the Middle Kingdom. The fastener is used as a hieroglyph from the 1st dynasty onwards (Nos. 10 and 11), and reads $k\ddot{p}$, or $k\dot{p}$. On examination, it is clearly seen, both in the hieroglyph and in the object itself in use, that it is not a tied knot though it is intended to represent some method of fastening strings securely. No. 5 shows two loops and two ends, which suggests the ordinary bow, the others, however, have four ends and no loops. But whether loops or ends, they appear to pass through a leather or metal tube. Such a tube would be quite unpractical and could not hold the weight of the panther skin dragging on the strings. We are then forced to conjecture either that this is the conventional representation of an ordinary bow-knot, or that it is an ornament made up and sewn in position, like our shoulder-knots.

Another form of the shoulder-knot is worn by the panther-clad official in attendance on Narmer (No. 12). This is the nearest approach to the true representation of a knot which occurs before the Middle Kingdom, although the cleft in the middle of the cross-over (No. 13) shows that the artist did not desire to represent the knot with accuracy and truth. A similar shoulder-knot is worn by User-neter (No. 14) when clothed in a panther skin. Here the hemispherical objects are perhaps used to prevent the strings from slipping through the tube through which the ends are passed.

Turning from this clearly artificial fastening, we come to another part of the costume in which a knot is essential, *i.e.*, the girdle; yet here again the artist carefully abstains from any truthful representation. On the slate palette of Narmer the king is in the act of smiting the , who wears a girdle only. This girdle (No. 15) consists of a belt round the waist, the ends of which fall in long loops in front; the little projecting knob above the girdle seems to indicate that the girdle itself and the loops were tied together in one knot, though judging by the drawing one might almost suppose that the bunch of loops were separate from the belt and were pulled through the band which held them in place. The angle at which the belt is worn precludes such an interpretation of the drawing; the bunch of loops, if separate, could not have retained their position unless they actually formed part of the girdle.

Another type of girdle is worn by Narmer's personal attendant (No. 16). In this, the method of fastening is studiously concealed. Yet another type of girdle is found on the ivory figure from Hierakonpolis (No. 17), where a single loose end is brought over the waist-band and falls down the front of the loin-cloth; its connection with the loin-cloth or with the belt is impossible to determine; the method of fastening is obscure.



In the carefully detailed representations in the tombs of Rahotep and Ptahhotep, the same avoidance of knots can be observed (Nos. 18, 19 and 20); the girdle is clearly tied, but the method of tying is left to the imagination.

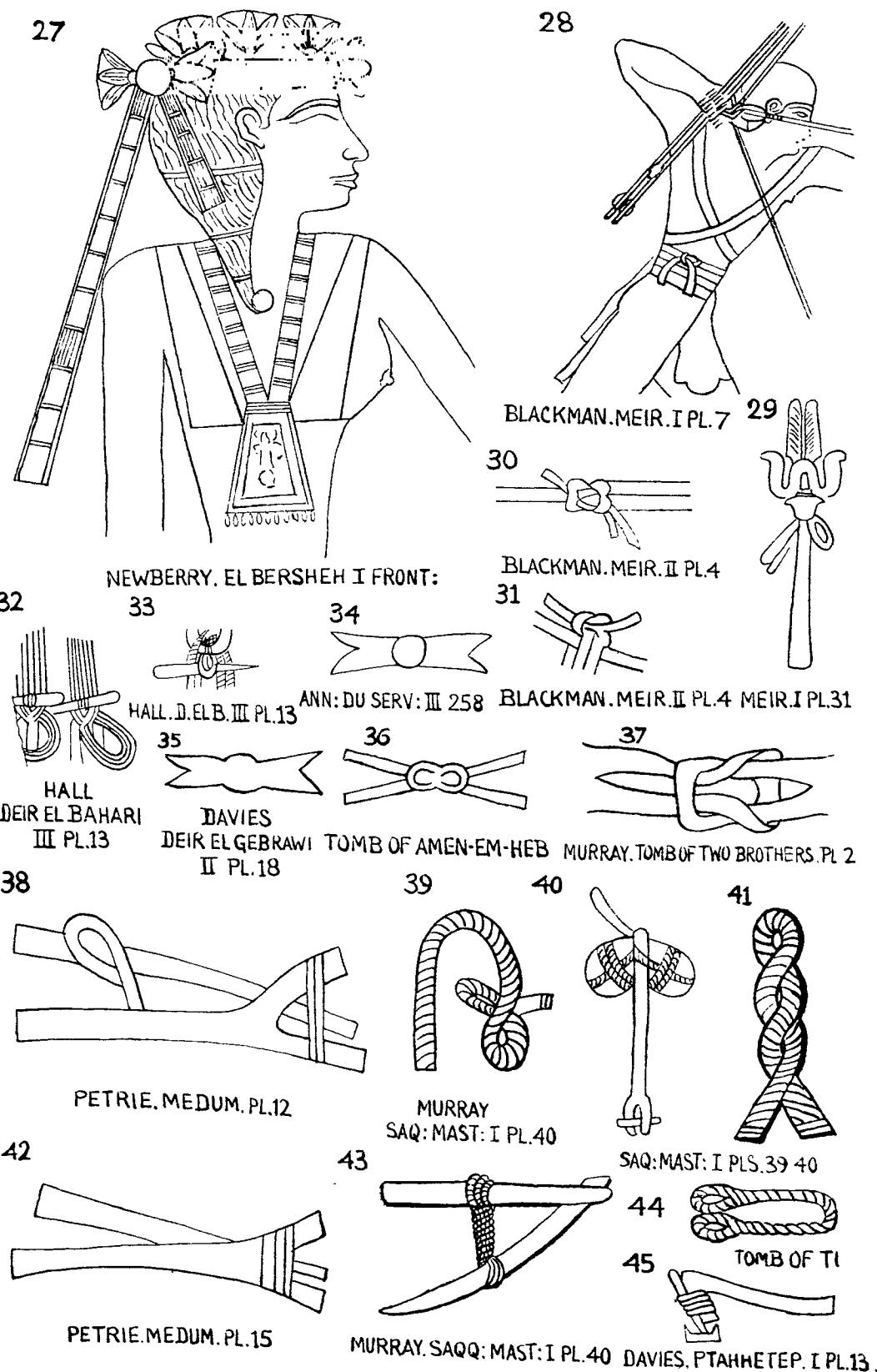
So also in the case of ropes by which animals were secured. In No. 21 the rope is simply curved round the creature's front leg, and in that position could not have held the animal for a moment. In No. 22 a bow-knot is indicated, though it and the leading-rope have no apparent connection with the rope-collar encircling the animal's neck. Again, in the rope attached to a hoop in the ground, used for securing a calf (No. 23), the knot is only vaguely indicated. The elaborate rope appendage worn by the sacrificial ox (No. 24) may have been spliced to the leading-rope as there is no visible join. But though splicing may account for some of the joins this method could not have been used in No. 21, where a knot of some kind was essential.

The first attempt to represent a knot truthfully occurs in the XIIth dynasty jewellery, both at Dahshur and Lahun (No. 25). Here the reef-knot is clearly, though not accurately, indicated; and the mere fact that it occurs as a jewel shows that the ordinary fastening of strings of beads was by a knot. At the same time, representations of knots in ordinary life are as studiously avoided in the Middle Kingdom as in the earlier periods. At El Bersheh the ropes, by which the colossus is dragged, are merely bunched together without any connection (No. 26); this must be intentional, as the most careful attention paid to detail in the rest of the scene shows that the artist could have represented the knots had he wished. Tehuti-hotep's daughter (No. 27) wears an elaborate head-dress consisting of a wide fillet with pink lotus-blossoms; at the first glance the fillet appears to be tied in a bow with wide loops, but a closer examination shows that the ends of the fillet pass apparently through a metal clasp in which lotuses are fastened. As such metal fasteners have never been found in any of the numerous Middle Kingdom burials, it can only be supposed that this is merely the conventional representation of a knot.

At Meir, Senbi wears a girdle (No. 28) twisted several times round the waist and fastened by what purports to be a knot though in reality it is nothing of the kind. The cross-belts which pass over the shoulders are fastened at the back with the ends hanging down, but the knot itself is discreetly hidden. The Ukh sign (No. 29) also shows a knot which is no knot, the loop being coloured blue while the ends are white with a little red; this suggests that the loop and ends have no connection with one another. In a bird-catching scene at Meir, the two ropes which close the net are fastened to the pulling rope (No. 30), the knot is given with great detail, but it is not a real representation of a knot. On the same wall is a scene of boat-building, and here the knots are almost accurate (No. 31), showing that the artist could indeed draw a knot if he so desired.

In the temple of Mentuhetep, at Deir-el-Bahri, the ropes at the side of the boat (Nos. 32 and 33) are so arranged that the method of fastening cannot be seen. It is evident that they are not knotted, therefore they must have been either spliced or lashed.

In the hieroglyphs, the same aversion to knots is equally evident. The sign *ts*, which means a knot, is never represented as a true knot. In the VIth dynasty (Nos. 34 and 35) there is no attempt to show the structure of a knot. Even in the XVIIIth dynasty (No. 36) there is only the indication of the form; sufficient, however, to give the general effect of the method of joining two bandages used frequently in the Middle Kingdom (No. 37). Other hieroglyphs show that



ropes were not knotted, but were lashed round an object and the loose end tucked in. The *sn*-signs (Nos. 38 and 42), in the tomb of Rahotep, show this lashing in common use. The *w*-sign (No. 40) is one of the most interesting of the cord-hieroglyphs, as it represents the loops used in forming a clove-hitch; here the cord is only in position, the knot itself is not completely made. In the *hmti*-sign (No. 40) the ropes appear to be fastened by lashing, as no sign of a knot is visible. In the *h* (No. 41) the ends are obviously tied to prevent their spreading, but the method of fastening the ties is not given. In the fine example of the *mr*-sign (No. 43) the rope is looped three times round the blade and round the handle, the loose end is then twisted round and round the three strands and probably pushed under one of the loops where it was held firm. In the rope handle (No. 44) the loops appear to be made by lashing; and in the *stp*-sign (No. 45) the blade of the adze is securely lashed to the handle without the sign of a knot.

From the evidence before us, it seems, therefore, that in the early dynasties knots were never represented. In the Middle Kingdom, though the same prejudice still existed, there was a movement towards an accurate presentation of the knot, showing that there was a change and that the old ideas were beginning to pass away.

M. A. MURRAY.

PERIODICALS.

Zeitschrift für Aegyptische Sprache, Vol. LIII, 1916 (continued from 1921, p. 128)

SPIEGELBERG, W.—In the “Two Brothers,” whose temple was near the Serapeum at Oxyrhynchus, Grenfell and Hunt see the Dioscuri. But Spiegelberg thinks they really belong to the Egyptian pantheon, for personal names are combined with two, three and even four “brothers.” The divine name Psosnaus is in Coptic **πενογνατ** “two brothers,” and Chemsneus is “three brothers.”

SCHÄFER, H.—Commenting on Spiegelberg’s proposed discovery of the mention of a water-wheel on a ushabti-figure, Schäfer quotes Marti’s translation of Deut. xi. 10, “The land, whither thou goest in to possess it, is not as the land of Egypt, from whence ye came out, where thou sowedst thy seed, and wateredst it, like a garden of herbs, with thy foot [-driven water-wheel].” The explanatory addition in brackets should rather be “watering machine,” as there is nothing to show that it was a wheel. It is, however, important to find that a water-machine worked by the foot was known as early as the seventh century B.C. So little is known to us of the ordinary life of the Egyptians in the first millennium before Christ that we are largely dependent for our knowledge on foreign sources.

Zeitschrift, Vol. LV, 1918.

SCHAFER, H.—*Altes und Neues zur Kunst und Religion von Tell el Amarna*. Prof. Schäfer’s paper on the Art and Religion of Tell el Amarna fills nearly half of this number, and is a criticism of Borchardt, with whom he disagrees on most points. Schäfer is frankly conservative in his estimate of Akhenaten, regarding him as a great reformer both in religion and art, whereas Borchardt’s opinion is adverse to the heretic king.

Schäfer divides the royal portraits of the Tell el Amarna period into three classes : (1) Portraits with the name of Akhenaten but drawn in the conventional Egyptian style. These are usually said to have been made before the king instituted his reforms, but Schäfer now concedes that Borchardt has now proved that they are portraits of Amenhetep III and not of his son. It is inexplicable how this can be asserted in view of the youthful Akhenaten of conventional Egyptian style, with cartouches, adoring the radiant sun (Prisse, *Mon. X*, 1). (2) The hideous portraits, often bordering on caricature, of the king and queen, emphasizing their physical defects. Here Prof. Schäfer stops to point out the two characteristic features of Akhenaten’s face—the hanging chin, and the nose-line continuous with the forehead. These two features are found in the real portraits of the king, but Schäfer is obliged to confess that there are so many variants of the royal face that it would be impossible to recognise them unless they were named. Akhenaten and his queen are represented with long thin necks, but Akhenaten’s is always distinguishable by the slight arching of the nape. The mummy of Akhenaten shows that he had a tendency to hydrocephaly with the back of the skull enlarged, a condition which appears in his daughters.

Borchardt contends that Queen Nefert-ythi's head was not of this shape, and that all figures of queens with "bladder-heads" represent someone else; but Schäfer refuses to admit this. It is interesting to find two learned professors disputing over a matter which a woman would settle at once, after seeing the photograph of the exquisite figure in the Berlin Museum, shown on Pl. VI, 2. The shape of the head is clearly a method of arranging the hair, which is either rolled on itself, as is done by Tamil women in Madras, or is taken back smoothly over a cushion, as was worn by many people a few years ago. The smoothness, which is an essential in this style of hair-dressing, could not be expressed by an Egyptian artist except by colour. The princesses are represented with the same kind of hair-dressing, for even little girls wore wigs like their mothers throughout the historic period of Egypt. (3) The third group of portraits shows the same features as the second, but less markedly pronounced, and are distinguished also by the earlier age of the royal couple. The beautiful statue, numbered Berlin 20496, is said by Borchardt to be of Tutankh-Amen. This is strenuously disputed by Schäfer, who points out that in the five known portraits of Tut-ankh-Amen the line under the chin is straight, whereas Akhenaten always has a hanging chin, a feature clearly shown in this statue. The retreating forehead, the slightly arched nape, and the backward curve of the skull are also very evident, and prove the accuracy of Schäfer's ascription. In the Berlin relief No. 15000, which Borchardt attempts to prove is of Akhenaten's daughter and her husband, the hanging chin of the king stamps it at once as the portrait of Akhenaten himself.

The representations of domestic life among the royal family are not peculiar to this period. There is a fragment of ivory now in the Ashmolean Museum at Oxford, which shows a king of the Ist dynasty with his queen on his knee. Erman has also remarked that the kings of the New Kingdom took pains to show that they were human, and were often represented in the ordinary dress of the period.

As regards the religion of Tell el Amarna, it is generally acknowledged that the Aten-cult was practised at Heliopolis and was known in other parts of Egypt. Maspero considers it a local cult raised to the supreme place. It is very certain that Amenhetep III called his boats, his palace and his army after the Aten, and his own name was "Nebmatre, the glittering Aten." The inscribed block at Berlin was found at Karnak, and shows the Aten as a hawk-headed man. This is dated by Borchardt to Amenhetep III, and shows that there was a place for the worship of the Aten before the time of Akhenaten. But though the Aten was worshipped earlier, the representation of the sun with rays ending in hands begins in the reign of Akhenaten, and is peculiar to that period only (see Prisse, *Mon. X*, 1, quoted before). Schäfer does not agree with Borchardt that the block came from Hermonthis, but thinks that, as it was found with other blocks built into the pylon of Horemheb, the Aten-temple must have been at or near Karnak. Borchardt also maintains that even before Amenhetep III there was a city called "Horizon of the Aten" at Tell el Amarna, with a large part of the temple and palace. Schäfer strenuously denies this, quoting Akhenaten's own words when he says that he found the place belonging to no deity or ruler, "The king raised his hand to heaven and to his Creator, and swore that in no other place would he establish the city." Borchardt's chief argument, however, is a fragment published by Wilkinson, showing Akhenaten offering to the Aten, with the inscription, "The living Aten, in the temple of Men-khepru-Ra in the Aten temple in Akhet-Aten." Schäfer's refutation is that the temple of Thothmes IV is another name for one of the chantry chapels, called "Shadow of Ra," which

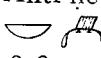
Akhenaten built and dedicated in the names of his relatives. Borchardt brings forward another argument in the fact that in the tomb of Huya (Davies III, Pls. X, XXV) statues of Amenhetep III are represented, and suggests that Akhenaten tried to efface the memory as well as the name of his father. Schäfer points out that Akhenaten destroyed only the personal name of his father, in which the hated word Amen occurred, and that the statues of the father were set up in the temple by the filial piety of the son.

Borchardt will not even allow that Akhenaten appears in "the glory of a reformer." Schäfer thinks that, from the evidence of the Tell el Amarna tombs, the king was the moving spirit and himself preached the new doctrine. He ascribes the failure of the reform to an under-estimation of the power of traditional religion, and also to the fact that it was too philosophical for the mass of the people. At any rate it is the figure of Akhenaten which stands out as the chief Aten-worshipper, without whom the Aten would have been to us but one out of a hundred other obscure gods.

Though Borchardt lays stress on the fact that Egypt's foreign power fell, and the country itself was reduced to chaos, neither he nor Schäfer appear to have considered the possibility that the whole movement may have been political as well as religious. Throughout Egyptian history, whenever a glimpse can be obtained of the underlying forces at work, there is manifest a struggle for supreme power between Church and State. It is seen in the Old Kingdom, when Khufu and Khafra bridled the power of the priesthood, and were branded as tyrants by the priestly recorders. In the XVIIIth dynasty the magnificent donations of the victorious kings to the temples, especially that of Amen, gave enormous power into the hands of the hierarchy, who were never slow to combine the spiritual and temporal kingdom. Akhenaten was not a Khufu to defy the priesthood, but he made a gallant stand; and by removing the capital from Thebes to Tell el Amarna he struck a blow at the prosperity of the great priesthood from which it would never have recovered had he lived longer or had his successors stood firm.

Prof. Schäfer has unfortunately seen fit to end his very interesting paper by some sarcastic remarks, made without verifying the facts. Arrows of sarcasm shot from the bow of inaccuracy are apt to injure the archer more than the quarry.

SCHÄFER, H.—*Die angeblichen Kanopenbildnisse König Amenophis des IV.*
 Prof. Schäfer here discusses the portraiture of the four human heads of the canopic jars found in the tomb ascribed to Queen Tyi. They were first said to be portraits of the queen herself, but Maspero brought forward arguments to show that they were the portraits of Akhenaten. Schäfer agrees that they are not Tyi, but also refuses to admit that they are Akhenaten. In his previous paper he has proved that the one constant feature, from the best to the worst portraits of Akhenaten, is the hanging chin, whereas each of these heads show a straight line under the chin. The retreating forehead is common both to Akhenaten and his wife, who bears a strong resemblance to the king; but their respective portraits can usually be distinguished by the difference in the shape of the chin. Schäfer compares the profile of the canopic heads with the profile of the Berlin figure of Nefert-ythi, and concludes that they represent the same person, namely Akhenaten's queen. As the so-called "Tomb of Tyi" was evidently used as a hiding place for royal mummies, Schäfer thinks that some of the costly tomb furniture was also secreted there.

BURCHARDT, M., und ROEDER, G.—*Ein altertiimeln der Grabstein der Spätzeit aus Mittel-ägypten.* This stone bears an interesting inscription for a man named Änti-hetep. He held various offices, many of whose titles are rare, such as , “Lord of Gladness,” which occurs always with the place-name . The style of the stela, and the careful work, is so fine as to approximate to Middle Kingdom sculpture, and Middle Kingdom influence seems to be apparent even in the inscription. The name of the man, for whom the stela was inscribed, is , which has often been read *ḥrti*, but Sethe now reads it as ‘nti, a form which would be hellenised as Antaios.

SETHE, K.—Zu den mit  wr “der Grosse” beginnen den alten Titeln. There are a whole series of titles beginning with , always showing very high rank. These have always been read as (e.g.) “The Great One, the Leader of the Craftsmen,” “The Great One, the Seer,” and so on. Sethe now proposes to read the word *wr* in this connection as the superlative, “The Greatest of the Leaders of Craftsmen,” “The Greatest of the Seers.” This reading is particularly happy in the title of the High-priest of Hermopolis, “The Greatest of the Five of the House of Thoth,” and of the High-priestesses of male gods, “The Greatest of the concubines.”

MÖLLER, G.—*Ein koptischer Ehevertrag.* Coptic marriage-contracts are rare, only four having been published. The one, which Möller now publishes, is in Sahidic, and is dated, by the mention of John Patriarch of Alexandria and Michael Patriarch of Antioch, to about A.D. 1208. This example gives the bridal dowry as one hundred gold solidi, of which twenty were paid down, but no time limit is set as to the payment of the remainder. In the contract published by Sir H. Thompson (*P.S.B.A.* XXXIV, p. 173) the bridal dowry was also one hundred gold solidi, of which twenty were paid at the time of the marriage, the remainder to be paid in five years. For a much humbler marriage see *Gizeh and Rifeh*, p. 42.

WIESMANN, H.—*Koptisches.* Herr Wiesmann has published some highly technical notes which are interesting to students of Coptic, especially of Bohairic. He has collected special uses of negatives and peculiar meanings of words.

MÖLLER, G.—*Mjibr = Μεγαβάροι.* In a demotic marriage-contract of the time of Ptolemy Philopator, one of the contracting parties is “Pabus, the *mkbrr*, who was born in Egypt.” Spiegelberg has already suggested that the word is an ethnic name from Nubia, and Möller now connects it with the Megabaroi, who are mentioned, under various spellings, by several Greek and Latin authors. These Megabaroi are said to have lived in Nubia, and were neighbours of the Blemmyes. Möller identifies them also with the modern Mekaberab who live on the east bank of the Nile, north of Meroë.

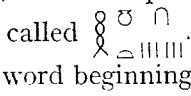
SCHÄFER, H.—*Nubisches Agyptisch.* In his study of the inscription of Nastesen—an Egyptian text from Nubia—Dr. Schäfer explained the numerous extraordinary faults of spelling and syntax which it contained, by reference to the same kind of mistakes made by Nubians of the present day when writing Arabic. In support of this theory he publishes an Arabic letter from his own Nubian servant, showing exactly the same kind of grammatical and orthographical faults as in the inscription of Nastesen.

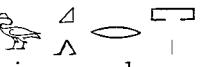
SPIEGELBERG, W.—*Ein Brief des Schreibers Amasis.* Ten years ago Maspero published two fragments of a papyrus, which attracted little notice, though belonging to the beginning of the XVIIIth dynasty, at which period documents are rare. The papyrus is a letter from a man named Aāhmes, a scribe in the service of a certain *Pn̄t̄t̄*, who is already well known as having lived in the reigns of Amenhotep I, Thothmes I, Thothmes II, Hatshepsut and Thothmes III. The writer complains that a slave girl has been taken from him, and given to someone else, and her mother has written to ask why her daughter has been removed against the girl's own wish.

ERMAN, A.—*Ein orthographisches Kriterium.* Any help towards the exact dating of an inscription is always welcome. For practical purposes, one of the best means of dating is in the spelling and writing of common words. Prof. Erman illustrates this with the root  , which as preposition and adjective took, in the Middle Kingdom, the determinative . The determinative properly belongs to the word only when it means Face. As often happened, the determinative became confounded with, and was used instead of, the correct phonogram. This occurred occasionally in the Middle Kingdom; the use revived in the latter part of the XVIIIth dynasty, and was common in the XIXth and XXth. Therefore any inscription, in which the spelling  occurs, would belong to the XIXth or XXth dynasty, or at earliest to the XVIIIth. Curiously enough, hieratic papyri do not show this spelling till after the New Kingdom.

SPIEGELBERG, W., und SETHE, K.—*Das Grundwort zum Lautzeichen*  *d.* This is a double paper. Spiegelberg begins by pointing out that the alphabetic sign is derived from the word  ,  , which—as the single line shows—is a picture of the creature and not a phonetic. Sethe and Gardiner have identified  with  , but Spiegelberg points out that in the Pyramid Texts the two snakes are sharply distinguished: “This is the viper () which came forth from Ra, this is the uraeus () which came forth from Set.” He suggests that the Coptic **axw**, **exor** *Viper* is derived from this word, which in its original form must have been *ȝdit*, only the strong consonant  surviving as an alphabetic sign. The second part of the paper is by Sethe, who while agreeing that the origin of **axw** is , will not admit that his derivation of  from   is wrong. He brings forward several proofs, of which the most convincing is the writing of the royal title   on the “Menes-Täfelchen” of Naqadeh. He therefore considers  as an early form of writing the venomous snake which is usually written . The difference would be between the uraeus in peace, as the goddess Uazet, and the uraeus reared up to strike in judgment, as the king.

LIDZBARSKI, M.—The demotic word *mtk̄t̄* “army” seems to have been introduced into the language from the Assyrian at the time of the Assyrian conquest.

SCHÄFER, H.—According to Horapollo, the number sixteen, whether spelt out or written in numerals, means Joy or Pleasure. Hathor is called  Schäfer suggests that the Egyptian word must be sought in some word beginning with **HWTR-** or **HWTR-**. As an addition to a previous paper (*A.Z.* XLII, p. 72) he mentions that at Denderah the number nine is written .

SPIEGELBERG, W.—The phrase  “to enter a house” is probably an idiomatic term for marriage, and comes down from the XIXth dynasty, or even earlier.

MÖLLER, G.—The word  was recognised by Goodwin as meaning “wife.” Möller suggests that it means “the covered-up one,” and cites a Nubian marriage custom in support. The bride comes alone to the bridegroom closely wrapped up in cloth, and resists all attempts to remove the covering till she receives the bride price.

Comptes Rendus, Acad. Inscr. et Belles-Lettres.

15 Oct., 1920.

LACAU, P.—*Les Travaux du Service des antiquités de l'Egypte en 1919-1920.*—At Denderah work interrupted in 1914 has been resumed. A *mammisi* has been unearthed, older than the well-known one of Augustus. It was built by Nekht-hor-heb, and under the myth of Horus commemorated the divine birth of the king as a son of Amen and Hathor. By the side of this is a Christian basilica, built from the spoils of the *mammisi* of Augustus. The sacred lake has been found; it is 31 by 25 metres, with a gate at each corner opening on a stairway. The walls are 3 metres thick. The Ptolemaic water level was 2 metres lower than at present. The sacred lake was the parallel to the tank of water which was essential to any private house. A well adjoins it, for drawing water to serve the temple. The store-chambers have been found in the south-western corner of the great enclosure.

The tomb of Petosiris is next described, which has been noticed here in the abstract of the *Annales du Service*.

At Hermopolis the cemetery of the ibis has been opened, and 200 metres' length of gallery has been explored, containing thousands of burials. Most of these are placed in jars, but others are in loculi, or in small sarcophagi of stone.

Comptes Rendus, 17 Dec., 1920.

G. JEQUIER.—*L'Enneade Osirienne d'Abydos et les enseignes sacrées.*—After describing the well-known enneads of Heliopolis and Hermopolis, the ennead of Abydos is described from the great stela of Tehutmes I. At the head was of course Osiris, then Khnum of Antinoë, and of the Cataract; Thoth Chief of the gods, and of Hermopolis; Horus of Letopolis, and avenger of his father; Upuatu of the South, and of the North. The worship and sacred objects of these gods were established by Tehutmes I, and three centuries later in the temple of Sety I there is figured the sacred head of Osiris, and before it the eight ensigns of these gods. Such ensigns are only found in scenes which are, or may be, religious, and they seem therefore not to be military or tribal. [Yet we must remember that the tribe was denoted by its god in the earliest times.]

Museum of Fine Arts Bulletin, Boston, April–June, 1921.—This contains a report of 18 pages, more than two years after date, of the discovery of the pyramids of the XXVth dynasty. Such an interval ought to have sufficed for the complete publication, instead of adding to the ever-increasing pile of future obligations for volumes. Behind the village of El Kur'uw, about as far north of Barkal as Nuri is south of it, lies the pyramid field. There were but weathered heaps of débris, yet these covered the tombs of Kashta, Pionkhy, Shabaka, Shabatoka and Tanutamen. Beside these are other tombs, on what appears to be the more obvious part of the site, and therefore earlier. Dr. Reisner estimates these as extending back to 900 B.C. These earliest tombs contained many finely chipped arrow-heads of flint and chalcedony. Such suggest that the rise of this family was from the Libyan desert. These had been very rich in gold, judging by the quantity which the plunderers had dropped as negligible. Fragments of fine Egyptian work showed an active trade in objects of luxury. Tombs of the queens have also been found, and the tombs of the horses of the kings, four of Pionkhy's, eight each of Shabaka and Shabatoka, and four of Tanutamen. They were of a short and rather small breed, and were buried upright in the graves. Though no trace of a chariot was found, it seems that the numbers four and eight suggest pairs or fours to draw chariots. Beside the views of the site and tombs, with ritual chapters inscribed on them, there are figures of a blue bowl with reliefs of bulls ; gold, garnet and carnelian necklaces ; silver amulet figures and vessels, a "canopic" figure of crystal and gold, faïence plaques and necklaces, alabaster vessels of the early stages of the alabastron type ; blue glazed relief and openwork figures ; ivory carvings ; alabaster canopic heads ; a gold band collar of a queen ; bronze bed legs resting on a goose, of Shabatoka ; the heart scarabs of Shabaka and Tanutamen ; a silver mirror hawk with four statuettes of gods around it ; and a bronze gazelle. Beside the historic interests, there is the artistic outlook of the Ethiopian adaptation of Egyptian work and motives. As a matter of taste, the changes are all to the bad, yet the African taste for fat women did not spoil many of the designs, and there is a good deal left to admire.

REVIEWS.

The Kalahari or Thirstland Redemption.—By E. H. L. SCHWARZ. 8vo. 163 pp., 14 pls. (No date or price.) Blackwell, Oxford.

Though the purpose of this book is a matter of economics and engineering, it has so important a bearing on the history of the Nile valley and historic changes of climate, that it should be understood by our readers. The abundant data and facts related here, as well as the author's public standing, show that the conclusions deserve the most serious consideration. The broad position is that the table land, about half a mile high, of South Africa is so nearly flat, that small impulses of storms, surface denudation, and other transient changes, suffice to spill a river discharge one way or the other in a few years. Also that the short coastal rivers are eating back and tapping the head waters of the internal drainage, so as to remove the rainfall rapidly instead of letting it feed flood-lakes. The actual total of rain is of much less import than the spread of it over a longer season, and thus keeping a moist atmosphere during the period of growth. The system which such a form of land needs is that of large drainage lakes which can evaporate, and so produce fresh precipitation and moist atmosphere, instead of deep gorge-rivers, which are useless. The author's remedy of dams does not concern us here, but rather his reading of the history of North Africa, in view of what is rapidly going on in the South.

The Nile history is started with the discharge of Lakes Tanganyika and Kivu into the Nile, extending its course about 700 miles. Such discharge has recently been cut off by volcanoes arising, and thus forcing the lake to rise and spill over into the Congo. How recent the change may be is suggested by a native belief remaining that Tanganyika did discharge northward. The change may well be within Egyptian history. Another volcanic change was when the old direct channel of the Nile, from near Khartum to Ambukol, was blocked at the south end, and the Nile had to make a long detour through Berber. Lower down, the early Nile is stated to have run through the oases of Khargeh, Dakhel and Farafra. The Atbara was an independent river running down to Abu Hamed, and on through a great desert valley to Korti or Aswan. The Atbara then worked back a side stream (? Abu Hamed to Ambukol), and so tapped the Nile, and drew it off from the present oasis line to the present Egyptian course, which was the old Lower Atbara.

The author considers that the earliest Congo discharged northward through the Saharan region, and the evaporation of lakes along its course would maintain fertility there. It was the tapping of the Congo westward which ruined the Sahara. All of these changes have to be kept before us when considering the changes visible in the excavation of the Nile valley, and the conditions of man in the palaeolithic ages.

The Earliest Internationalism.—By J. H. BREASTED. 8vo, 23 pp. (Lecture at the California Celebrations, 1918.)

After referring to the shipping of pyramid times, Sanehat, and the Shipwrecked Sailor, Dr. Breasted remarks on the commanding position taken by Egypt in the XVIIIth dynasty, holding the land link of Asia and Africa, crossed

by the water link of the Mediterranean and the Red Sea. The flow of foreign products, trees and herbs, animals and foreign men into the Egyptian capitals must have been a strange surprise. The reforms of Akhenaten and his religious change are looked on as part of a movement of internationalism. The letters of his age show how treaty rights extended to private property of foreigners. The importance of Asia Minor and the Hittite land in controlling the flow of Asia southward down Syria, is strongly insisted on. The resemblance of the ancient strategic position with that of our own day is well described. A remarkable letter has come to light from the widow of one of Akhenaten's successors, offering to take a Hittite husband, and so unite the Asiatic power with Egypt.

It was the Assyrian menace which led later to the treaty between the Hittites and Egypt. Dr. Breasted has made a very careful study of the great marriage stele at Abu Simbel, which recorded the festivities of the Egypto-Hittite alliance. With Egypt clearly decadent, the Hittite later looked to Babylonia, and stirred up there an attack on Assyria. This only led to the capture of Babylon, and the power of the Assyrian to entirely overthrow the Hittite power and civilisation.

A History of Sinai.—By LINA ECKENSTEIN. 8vo. 202 pp. 22 figs. (S.P.C.K.) 1921. 8s. 6d.

It is remarkable that no general history of Sinai has hitherto appeared. The interest of so many races and religions has not produced any summary of the many different periods which are there commemorated. This volume is all the more welcome as dealing with all the ages of the peninsula. The first third is occupied with Egyptians and Israelites, the next with Nabatheans and Christians, the last third with the history under Islam. After describing the nature of the country, the moon cult is discussed, the temple of Serabit and its surroundings are described, and then the history of the Egyptian occupations and their remains. The chapter on the early people and place names deals with the Anu, the Mentu, and the Retennu. The last, so well known in Egyptian inscriptions, remained down to the Raithenoi of Ptolemy, and the Retheny, who were the attendants on the mosques at Gebel Katrin as late as 1816. Various other tribes are mentioned in the Pentateuch and later writers. Two chapters deal with the Israelite questions, the author taking the new view that Serabit was the mountain of the Law. The historical position of Moses is here followed, and placed in a setting of locality and circumstance which renders it the more physically probable. How far this will fall in with the whole account needs full consideration.

The interesting commercial rise of the Nabatheans is summarised, and then the Hermit period, and life and writings are described. The history of the Convent follows, and the earlier settlement of Pharan. The strange episode of the introduction of the worship of St. Katherine the Alexandrian saint is described. Why she should have been so fervently accepted in Sinai is strange. Is it possible that her name fitted near enough to Hathor for it to carry on an older worship then near its end? There is plenty of varied interest in this book, and it will make a long-familiar name far more real to many readers.

Fishing from the Earliest Times.—By WILLIAM RADCLIFFE. 478 pp. 28s. (John Murray.) 1921.

"And first for the Antiquity of Angling, I shall not say much," wrote Isaak Walton. Mr. Radcliffe, on the other hand, has written many delightful

pages, which are certain of appeal to lovers of folk-lore, archaeology and fishing. A dexterous blend of learning and anecdote fulfils a promise of grace of treatment, which is implied by quotation in the dedicatory lines of Andrew Lang's appeal to Persephone to "grant that in the shades below my ghost may land the ghosts of fish." The book is generously illustrated, and the numerous notes and references to the latest authorities are an additional delight. Selection is difficult from such a mass of interesting matter. With chapters on Egyptian, Assyrian and Jewish fishing ahead, one may be tempted to hurry through the section on Greek and Roman times, though one would not willingly miss the account of the discovery by two unlettered French fishermen of the modern method of breeding fish, nor the recapitulation of the old theories on the vexed question of the propagation of eels, which was not solved until 1920. Excellent historical summaries usher in the Assyrian and Jewish sections, and the discussion of the reason why these nations apparently knew not the rod in spite of intercourse with Egypt. The fish which leaped out of the river and would have swallowed Tobias (R.V.) introduces an interesting account of misconceptions of the *jus primæ noctis* and its connection with "Tobias' days." Possibly the Chinese chapter contains some of the best anecdotes, for example, that of Chang-Chih-ho, that "glittering example of humorous romantic detachment and carelessness of public opinion, who spent his time in angling, but used no baits, as his object was not to catch fish."

L. B. ELLIS.

NOTES AND NEWS.

—
WORK AT ABYDOS.

ABYDOS is an oppressive site, as the enormous extent of hundreds of acres of cemetery far exceeds what any living person could hope to work out. Moreover, at present it has been so far exhausted that there is scarcely any obvious lead of importance, and most of the area that is not piled with past clearances, is deeply cumbered with late tombs, which have been nearly all plundered, and which in no case add materially to history or to collections. All that successive excavators can do is to select some definite and limited aim which can be attained, and complete that.

Some twenty years ago the Royal Tombs of the Ist dynasty were entirely cleared and examined, and later work done there did not add anything further to the results which I had found. In the course of later work, about ten years ago, yet another party cleared a part of the northern cemetery, near the old fortress of the IIInd dynasty, known as the Shunet Ez Zebib. Most of the tombs and graves were of the XIIth dynasty, but amid these were some lines of graves which were recognised as being of the Ist dynasty. Nothing was done to complete the plans of these; and, though carefully recorded, the account ends, "Whether these are isolated or connected phenomena, and what their significance is, are questions which cannot be answered." However this may be, the close resemblance of these lines of graves to those around the royal tombs, a mile or two distant, made it desirable to examine them completely; and as ten years had passed, and nothing more was done, it seemed worth while to step in and clear up these remains.

The British School accordingly began work on this part of the cemetery in December. In two or three days another line of Ist dynasty graves was found, but the site is slow to work in, as it is encumbered with ten feet of later structures of tombs built over it, large buildings have been placed cutting through the lines of graves, and the ground is riddled with long graves of the XIIth dynasty, which scarcely ever contain anything. Little by little we have won out a long front line of over thirty graves, and a side line at right angles almost as long is now appearing. The central burial pit had been cleared out, and deepened with five large trench tombs in the XIIth dynasty, for a noble Uahem-Shenu and his family, one of whom had four of the Ist dynasty stone vases laid over her body. Similarly, we have found two sides of the second great tomb circuit, long lines of graves, all anciently plundered, but containing enough of pottery and fragments to date them. The central tomb of this has not yet been attempted, as it is deeply covered with heaps from other excavators; but so soon as the circuit of graves is clear, we shall know where to sink for the centre. The pottery of the first tomb was evidently within a reign of the time of king Zer, and this was confirmed by twice finding his name and also that of a queen Mer-nesut. The Ist dynasty is so completely known in the royal tombs of Umm el Qa'ab that there cannot be other tombs of kings of that age; so it

seems likely that the queens were buried here, and the fortress near by was built two or three centuries later.

Such is the definite piece of work that the British School intends to settle, without any ambition to undertake the whole site. Of course, various later things are thrust upon us in the clearance of superimposed burials, but nothing of importance or value. One piece of a stele of Greek period is curious for the naturalistic figure of the worshipper, which is here reproduced. When the site of the Ist dynasty is cleared up, it is hoped to move down to Middle Egypt, and resume the regular clearance of the western side from last year's work at Sedment. The camp will be at Oxyrhynchos, which has hitherto only been worked for Roman papyri, but a nome capital should have temples and cemeteries of many ages to be sought for. The subject of the distribution of prehistoric flints is being thoroughly worked over, at Abydos, by Miss Caton-Thompson, of the staff of the School.

Though the excavation of the British School is expressly limited to the north part of Abydos, we have naturally visited the massive structure behind the temple of Sety, which was opened up in 1914, and which remains in the condition in which it was then left. As I had the advantage of discussing it with Mr. Wainwright (now Inspector of Antiquities for Middle Egypt), who managed the excavation, it may be as well to sum up what seems to be ascertainable about this unique building. It was entirely subterranean, as the stratified layers of marl thrown over remaining parts of it show that it was completely covered. The roofing of the middle hall was of a type unknown elsewhere; on each side cantilever blocks projected, sloping below, in order to carry great roof beams, which stretched across. There is no proof that any water was originally in it; for the general water-level of the country has risen so much that it would have been sixteen feet lower in the XIIth dynasty, to which date this building probably belongs. The walls of quartzite sandstone were partly dressed smooth, having an excess of two or three inches when built in, to be later reduced by dressing. The end of the hall was finished smooth and was afterwards utilised by Merneptah. The sides were partly smoothed at the top, and the surplus left below. The doorways of the cells around were never completed, and were therefore never closed. The sandstone floor blocks beneath the walls have never been smoothed at the edges to receive a close-fitting flooring across the halls; this does not preclude a floor having been put in, as the Egyptian was careless about the fitting of floors.

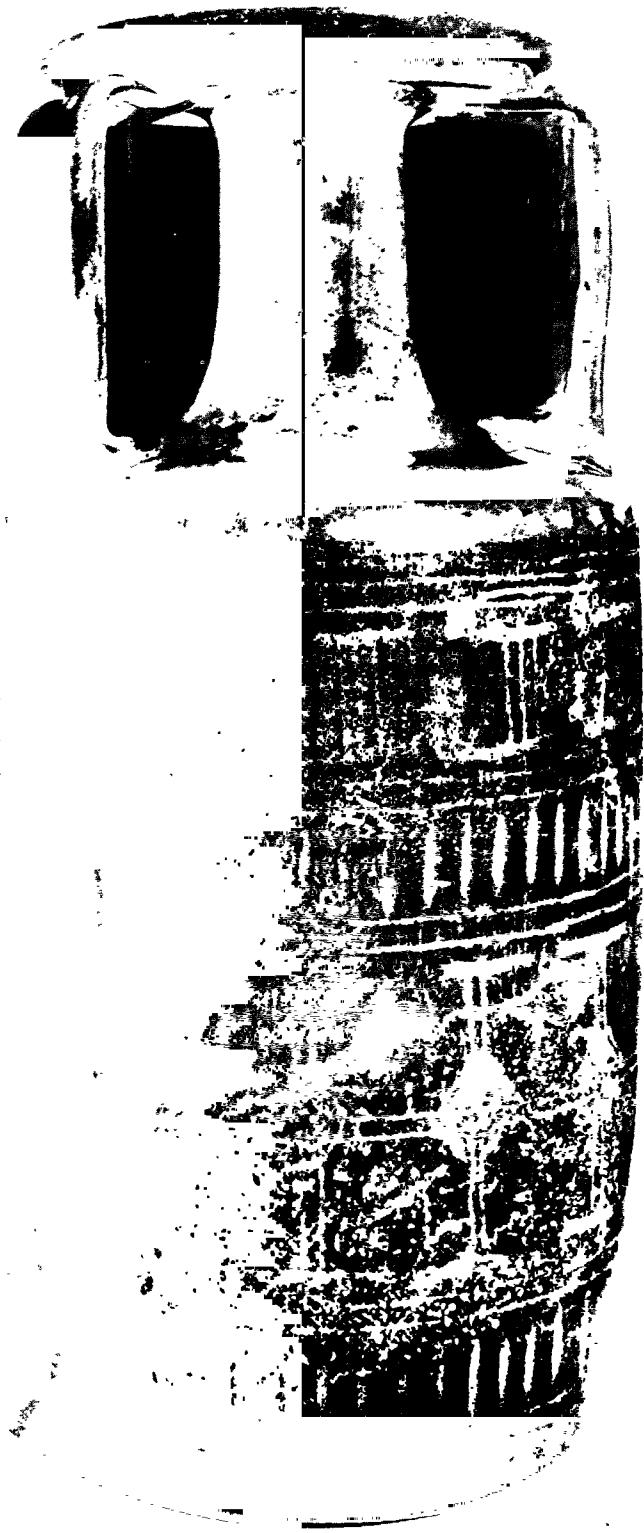
Though many uncertainties still remain, we may outline what seems likely to have been the history of the site. The grey granite used for the enormous pillars, architraves and roofing, was a stone which was rarely—if ever—used before the XIIth dynasty. The same is true of the quartzite sandstone, which was used for the walls, and for the floors which carried great weight; as it was lavishly used in the tomb of Senusert III here, it also points to the XIIth dynasty date. Certainly there is nothing like all this material to show in either the Old Kingdom or in the New Kingdom, and as it was all familiar in the Middle Kingdom it is to that period we must ascribe this building. The purpose of the four or five courses of hard stone foundation under the walls and pillars was to obtain a firm base to carry the enormous weight of the structure. The bay of hills at Abydos is filled with a deep mass of water-laid sand, with occasional patches of gravel. Such was too frail a bed for great weights, and foundations were laid in—probably down to the rock bed—for the superstructure. In the

spaces between the walls no such strength was needed for carrying a floor, and probably this was filled up to floor level with blocks of limestone, which were all used abundantly as filling, between the outside of the walls and the sand ground. The floor being thus completed, Merneptah would have been able to utilise the building ; while such limestone floor would be the first thing to be removed when the building became a quarry. Since then the rise of water level has filled up the spaces between the wall-foundations.

When Sety planned his temple here, he seems to have been aware of the subterranean building as he followed the same axis. But there was not enough length for the whole of his temple and its courts between the cultivation and the subterranean, so the back part of his plan was cut off and placed at the side of it, as described in "The Temple of the Kings." After that, Merceptah added a long approach sideways behind the subterranean, and sculptured the end wall of the great hall. This approach was cleared and published as "*The Osireion.*" The use of this building continued till Ptolemaic times, as is shown by the inscribed block found as a foundation deposit, under the gateway of the enclosure wall. In Coptic times it became a quarry, the limestone floor was all removed, the granite beams of the roofs were broken up, and parts of the architraves and pillars were split to pieces, to cut out millstones.

At Thebes, Mr. Winlock's party are continuing the study of the temples and tombs of the XIth dynasty ; Mr. and Mrs. N. de G. Davies are copying and recording the painted tombs ; and Messrs. Fisher and Mackay have begun work on the top of the hill of Drah abul Nega. Regarding the uncertainties of the political situation here we must trust to the judgment of the British authorities as to the desirability of continuing our operations, for we can but rely on their opinion and wishes.

W. M. FLINDERS PETRIE.



ENGRAVED GLASS JAR, 1 : 2.
OXYRHYNKHOS. VIth CENT., A.D.

ANCIENT EGYPT.

THE BRITISH SCHOOL IN EGYPT.

SHORTLY before the War there was published an account of a row of graves of the Ist dynasty, which had been discovered near the fort of the IIInd dynasty at Abydos. They were said to be inexplicable, and no attempt was made to search out their extent. As that region had been abandoned for eight years, there was no reason for other excavators not examining it. The British School therefore applied for this place, and has now worked over about 500 graves of the earlier half of the Ist dynasty. As such graves of royal dependents have not been known except around the Royal Tombs, this was probably the last great group of that age in Egypt.

At first we only anticipated finding a square of graves, around a larger burial, like the graves around the Royal Tombs a mile to the south of this. The work, however, continued to expand more and more until we had cleared a square of 350 × 400 feet, formed of 269 graves, an area large enough to hold all the royal tombs known before ; a second square, 250 × 380 feet, of 154 graves ; and a third square, less complete, 260 feet wide, with 76 graves. The graves around the royal tombs had diminished in number as the dynasty progressed, Zer having 326, and the succeeding reigns 174, 61, 131, 63, 69 and 26. The numbers of the new squares were therefore like those of Zer and Zet, but the size of the squares was much larger as the graves were in single or double line, and not in blocks. The pottery found in these graves showed that they belonged to the reign of Zet, or very near that ; and the royal names found on objects here were of Zer, Zet and Merneit. While, on one hand, the number of graves was far greater than was expected here, on the other hand there was no central burial. In one square there was a large pit, with burials of the XIIth dynasty in the floor of it ; but this was nearer to one end and much nearer to the east side. However, in one of the XIIth dynasty tombs were three stone vases of the Ist dynasty which might have come from a disturbed burial. In the largest square the whole area was searched, but no considerable pit could be found within it. The third square was deeply piled with sand heaps, but the centre of it and a long stretch near that were bared without finding any early burial. The search over all these squares was difficult as the ground had often been re-used, especially about the XIIth and XXXth dynasties, so that there was hardly room for another tomb. In the later time many large vaulted burial chambers had been inserted which destroyed all that went before them. The repeated building of surface chapels had retained much blown sand, and more had been thrown up

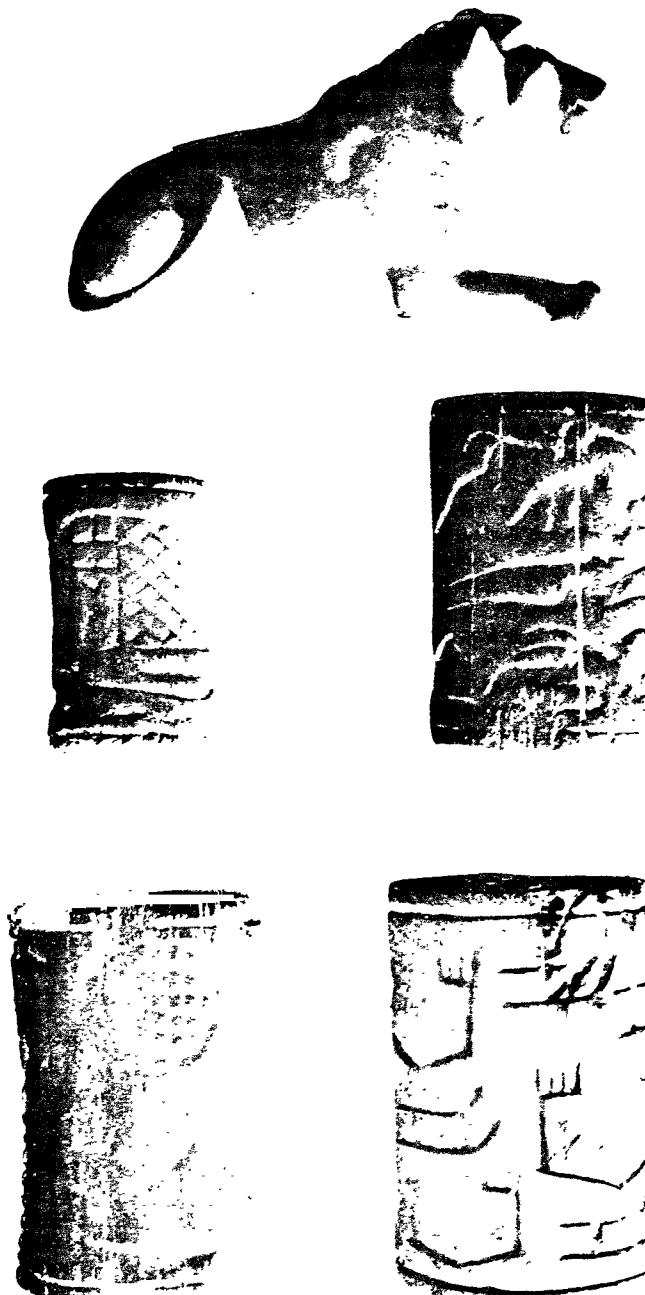
by digging, so that the Ist dynasty grave pits were buried under 3 to 6 feet of loose sand and later deposit. A large part of our time was swallowed in clearing these later burials, which at least produced three large steles of the XIIth dynasty ; but our attention was kept on the early graves to ensure that the really important subject was thoroughly worked out.

Most of these graves were empty or had only fragments of pottery. About a sixth of them still contained skulls and bones and some complete pots. Only a few were undisturbed, and had copper or flint tools. No gold or silver were found ; yet from such a large number of graves the total produce is considerable. Eighty skulls were obtained and measured, and have been soaked in paraffin wax to preserve them for transport. About half that number of skeletons were found and the long bones all measured. While the whole of the facial bones are the same size as those of the Ist-IIInd dynasty at Sedment, the median overall size of the skull was about 4 mm. less in each direction, and less also than at Tarkhan. This may be due to the greater warmth of Upper Egypt. From the burials around the Royal Tombs having been made rapidly in large numbers, it was concluded that the courtiers were despatched at the death of the king, like the Nubian custom exemplified at the burial of Hepzefa (ANCIENT EGYPT, 1916, pp. 74, 86). Among the burials found this year were several which seemed to have been made while conscious, and one shows clearly the struggle to get the head clear, the skull being twisted round over the back, which lay upward. These instances suggest that the men and women were stunned and then placed in the shallow graves, in the usual contracted position, and earthed over, so that they were smothered. This would be a painless death, and therefore the most likely for the unoffending courtiers. Even later in Rome, if a master were murdered, all the slaves in the house were killed.

The most remarkable object was a large ivory comb with the name of king Zet, over which was the bark of the solar falcon flying upon wings. Another unique piece was a large ivory wand for a dancer, ending in a ram's head. These were, of course, kept in Cairo. Ivory gaming pieces were found, eight or ten lions, some in fine condition, and sets of pieces for the prehistoric game. One draughtsman had the name of a queen on it, Mert-nesut. More than a dozen large flint knives were found, half of them thick for scraping, half thin and wide for cutting ; also many copper adzes, long knives notched on one side, axes, small curved knives pierced to hang at the girdle, and innumerable copper needles and ivory arrow heads. Some ivory labels of Zer and Zet were found ; four wooden cylinder seals, which will serve to date such things ; and half-a-dozen limestone steles, with the names of officials in relief, one being of Hetep-neb, the carver, denoted by a flint knife. The graves contained several alabaster cylinder jars and bowls of the usual form. Two remarkable pots came from some foreign source ; they are of very hard thin pottery that rings when struck, one, a two-handled jar like the foreign ones in *Royal Tombs II*, liv., but taller, much wider and dark brown, the other a cylinder jar or stand, fluted round the outside, only part of the top remaining.

The XIIth dynasty there are three large steles, found in wide pits with graves in their floor, half-a-dozen small steles, and an altar with 43 names of one family. In the groups of small objects there is a necklace of carnelian claws and ball beads, and a brilliantly glazed kohl pot with manganese veining. A tomb for cats had in the recess many little offering pots, presumably for milk.

Of the later times are found the ebony inlays of a shrine of a high priest of Osiris named Unnefer (see *Abydos II*, p. 45). A piece of a small stele has the wish expressed, not for the material offerings, but that the gods would grant "a sweet heart every day to Aanya." There were several later steles, none of them important.



IVORY LION. EBONY CYLINDER SEALS.

In a distant valley of the high desert we found a Coptic hermitage, complete down to the stove and cooking pots. In a natural cave the entrance was walled across, and a chamber arranged, open along the top, with a sleeping bench and a cooking bench ; an inner chamber opened on one side of it to a larder. At the back was a wall across the cave and a door leading to a chapel, with a window, and an altar recess in the eastern wall. On the front wall and inside the chapel were many Coptic inscriptions, elaborate crosses and decorations. All of these were copied in facsimile, full size, and also photographed. The whole place—in living room, larder and chapel—abounded with pegs of wood, bone and flint stuck into the wall—forty we counted. The hermit seems to have been very tidy and to have had a place for everything. The precision, tidiness, brilliant whitewash and decorations are far from the common idea of unkempt misery. Altogether this cave gives a more personal view of a hermit's life than any of the literature.

The desert, both at Abydos and Helwan, was very carefully searched for flints by Miss Caton-Thompson ; in this way the hermitage was found. The flints were all levelled, classified and tabulated, to study the distribution. We may hope that this is the beginning of a scientific study of this subject, which has hitherto been the prey of the looter and the casual collector.

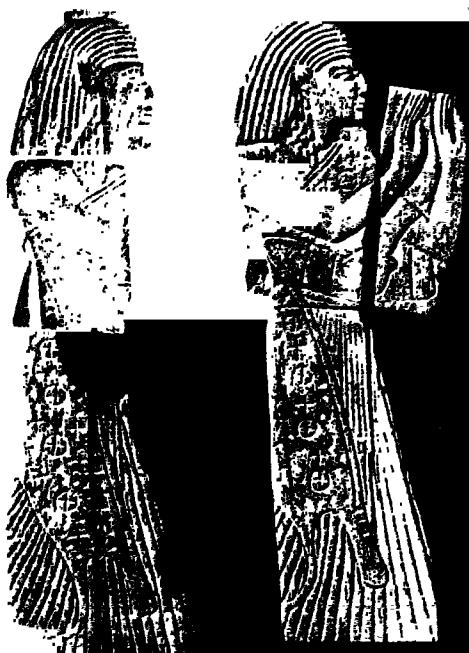
After this work we moved down to Oxyrhynchos to examine that region. Nothing dynastic had been found there, and the reason for this silence of a nome capital was unknown. We verified that there is nothing before Roman age above water-level both west and south of the present town of Behnesa, which is bounded on the east by the Bahr Yusuf. In a search over twenty miles of desert to north and south only Roman remains were observed. The ground is so flat that half a mile back to the west the Roman foundations are now at water-level. It seems that the older city must have been very little above water-level, and the whole of it, with its cemeteries, has been submerged by the dozen feet of rise since the New Kingdom. The early cemetery may be beneath the wide extent of the mounds of Roman age ; no tombs earlier than Roman were found on the desert, except one or two of about the XXXth dynasty at the south end.

Some columns which stood up in the ruins were traced out by deep digging. At last we reached to No. 28 in the line, which probably joined up to another line at right angles, at a distance equal to 54 columns further. The column shafts were $18\frac{1}{2}$ feet high, $12\frac{1}{2}$ feet centre to centre in the line, and 18 feet apart between the two lines. The whole colonnade was apparently 850 feet long or more, and 22 feet high over the capitals. The question arises whether the colonnades here and also at Antinoe, Alexandria and Palmyra carried a timber and matting roofing, like that over the bazaars in a modern town. This would give a purpose to these costly constructions, providing a shady way for public loitering. The long colonnade here ran toward the theatre, though not quite directly.

Another column suggests a third colonnade, but this region is so deep in Coptic and Arab rubbish that it would be very costly to clear. The work will be done before very long by the natives digging for nitrous earth. Even in a month or two I saw a huge crater cleared out close to the town, exposing an early Arab mosque, which would soon be destroyed. The rate at which the *sebakh* digging goes on is astonishing. A light railway has been carried from the bridge of the Bahriyah oasis line (now abandoned) round the whole back of the mounds,

and a long train of over a hundred tons of earth runs every morning in the season. Other light railways run down to the canal, and within a lifetime there will probably be nothing left but sifted potsherds over the site of some two square miles. Of course papyri are being turned out, and I secured hundreds of fragments, beside doing some digging for them. These have not yet been examined, but none were dated earlier than Augustus. There are some Hebrew fragments of the third century, which seem to be the oldest Hebrew manuscripts known. Dr. Hirschfeld is preparing to edit them in our publication, and they appear to be liturgical poetry.

A large area of sand and chips which I had looked at twenty-five years ago, before I handed the site to Dr. Grenfell, proved to be the theatre. The ruins are buried under 10 to 15 feet of sand, and to clear the whole would be very costly. We have done what seemed reasonable, to find the general dimensions and the detail of the stage. The diameter was about 401 feet, length of stage 200 feet 5 inches, width of orchestra 100 feet. The relation of these dimensions is notable, though we do not know of any ancient measure commensurable. At each end



EBONY INLAYS OF UN-NEFER.

of the stage was a spiral stair, exactly on the mediaeval pattern, with centre newel cut in one block with two steps, and the under side a smooth spiral twist. These stairs did not give access to the stage, but the one best preserved led to a gallery opening as a window 6 feet above the stage, and the stairs continued upward. Along the back of the stage were pilasters, and opposite the alternate ones were polished granite columns, 2 feet in diameter and about 13 feet high. Between the columns were draped statues of heroic size, probably of the Muses. The stage was flanked at the ends with a wall bearing attached columns and pilasters. The benches, with a footrest to each, were in bands of five with passways between. From the slope of these it appears that the outer wall must have been about 100 feet high. Around the top it had a very bold and deeply

cut band of flowers and foliage. The capitals and friezes of the stage were of good work for this period, about the IIInd century A.D. Examples of these will be exhibited. At the end of the stage there was an outside portico 52 feet wide, which did not open into the building. The whole of the seating must have held 10,000 people or more, a larger accommodation than that of the theatre of Herodes at Athens. This gives a great idea of the importance of this remote provincial town at that time. It is hard to see what supported so large a town or such immense cost of building, on the desert side, without any great trade.

The cemetery is immense, reaching at least a couple of miles each way and all of Roman age. There are four different types of tombs, apparently between the IVth and VIth centuries A.D. Probably the earliest is that with a subterranean chamber, reached by a stairway, and ground level chambers, with some painted decoration. This lower chamber is a continuation of the tombs commonly called *birbiyeh*, made in the XXVth dynasty and onward. There are sometimes stairs going to an upper storey, now destroyed. This type lasted on to the late Vth or VIth century, and also contained small graves in the ground floor chambers.

Next there are ground floor chambers with shallow graves. These are usually along a wall and covered by a bench of brickwork, with a raised end like a couch. Sometimes there is a stairway to upper chambers. In various tombs we have recovered a good deal of decorative sculpture.

The apsidal type is remarkable. There is a semi-circular apse about 7 feet wide, sometimes with niches in the sides, stuccoed and marbled. On either side of it is a small chamber with a door. Across the apse in one case was a low screen of slabs of stone on edge with an opening at one end. A few feet in front of the apse was a wooden screen across the chapel, sometimes with stone pillars in the line. The hall before the screen sometimes has a stairway to an upper chamber. Burials are in the hall. In this arrangement there seems the intention of having a chapel; the screens seem to show that there was some altar. There is not any mark or break on the back of the apse, nor any altar structure. As the Coptic Church uses a wooden table altar and places it with a clear passage behind it, such a table in the tombs would leave no trace. The frequency of tomb chapels seem to explain the Coptic statement that there were 316 churches in Oxyrhynchos. Such a number could not be in the town, but if every tomb chapel was counted it might well be reached.

A very different type of tomb was also found. Burials were made in the open desert in shallow graves. Around these, chambers were built with the brickwork rough inside and still rougher out. These walls were banked up with gravel as they were built, as upper walls often run far off the lower part, and could not be built without support. At about 10 feet high a flooring was laid, and the walls above that were plastered. A doorway at this level gave access. These upper rooms were for funeral offerings, and fragments of a statue of the deceased were found. The chambers were roofed, and a stairway led to the top. The whole was piled over with gravel, so as to appear as a tumulus with a door half way up. The gravel cover still remains, and unshifted, as we can see by the fragments of many glass cups that had been thrown away on the top, after making libations. They prove that the top surface has only been weathered down by wind and rain, but retains its materials in place. In other instances, the glass cups were found on the top of great ash heaps of a funeral pyre. The largest was

80 feet in diameter and 15 feet high, and we collected 15 pounds' weight of glass fragments on the top, the remains of much over a hundred vases. This custom was probably Egyptian, as I found on the top of a VIth dynasty mastaba at Dendereh the original offering pots lying in place, exposed for about 6,000 years. In one of these Roman tombs a very large engraved glass bottle was found, now in Cairo.

An unexpected result was found on visiting some rock tombs back in the eastern desert opposite Oxyrhynchos. A chamber of the VIth dynasty, with traces of fresco, had been used about the Vth century B.C. by Jews, who had left several long Aramaic inscriptions on the walls. Though much scraped and damaged it might be possible to recover much, or most, of them if some one thoroughly familiar with Aramaic were to live there for a few weeks. We much hope that some scholar will rescue these documents.

Varied as the season's results have been, they advance our knowledge and help to fill up the picture of ancient civilisations. The exhibition will be held at University College, Gower Street, during the four weeks of July (3rd to 29th), hours 10 to 5; and open on the evenings of the 5th, 15th and 25th, 7 to 9. Admission free, without ticket.

W. M. FLINDERS PETRIE.

THE SET REBELLION OF THE IIND DYNASTY.

So far as is at present known from contemporary monuments, the following kings reigned in Egypt between the end of the Ist dynasty and the accession of Neterkhet Zoser, the first king of the IIIRD :—

1. The Horus-king Hetepsekhemui, the  Hetep.
2. The Horus-king Nebra.
3. The Horus-king Neterimu, the  Neterimu.
4. The Horus-king Sekhemab¹ Perenmaat.
5. The Set-king Perabsen, the  Perabsen.
6. The Horus-king Khasekhem, who was afterwards² called the Horus-Set-king Khasekhemui, the  Hetep-Wnef (or Nebui-Hetep-Wnef).

An inscription on the shoulder of the Archaic Statue No. 1 of the Cairo Museum (Borchardt, *Statuen von Königen und Privatleuten*, No. 1) is our authority for the sequence of the first three kings. That they and Sekhemab preceded Perabsen³ is certain, for objects inscribed with their names have been found in the Set-king's tomb at Abydos (*R.T.* ii, pl. viii, 8–13, and pl. xxi, 164–172). That Zoser was later than Perabsen is proved by a sealing of the latter being found in Zoser's tomb at Bêt Khallâf (Garstang, *Mahasna and Bit Khallâf*, pl. x, 8), and that Khasekhemui must have preceded Zoser is evident from the fact that his queen Nemathap, “Truth belongs to Apis,” is called “Mother of the King's Children” on a sealing found in Khasekhemui's tomb (*R.T.* ii, pl. xxiv, 210), and “Mother of the -king” on a sealing discovered in Zoser's tomb (*Mahasna*, pl. x, 7). Sealings of Khasekhemui and Neterkhet (Zoser) have been found together in the old Shunet el Zebîb at Abydos (Newberry, *Annals of Archaeology and Anthropology*, ii, p. 136, pls. xxii–xxiii). A granite door-jamb of Khasekhemui and sealings of Neterkhet were discovered at Hierakonpolis (Quibell, *Hierakonopolis*, pls. ii and lxx), and an architectural fragment of granite inscribed with the name of Khasekhemui has been recorded from El Kab (*Annales du Service*, VI, p. 239).

The first two kings are believed to have been buried at Sakkara, where sealings bearing their names have been found (Maspero, *Annales du Service*, III, p. 182 seq.). Neterimu's tomb was perhaps at Gizeh, where many of his sealings have been brought to light (Petrie, *Gizeh and Rifeh*, pl. v, E). Of Sekhemab there are numerous sealings from the tomb of Perabsen (*R.T.*, II, pl. xxi, 164–172), but his burial place has not been located. Perabsen and Khasekhemui were both interred at Abydos (*R.T.*, II, pp. 11, 12). Zoser's tomb was at Bêt Khallâf.

It will be noticed that the first four kings of our list are all Horus-Kings, but the fifth assumes an altogether new title, and one that is never found with

any other king of Egypt. Instead of placing the Horus Falcon upon his palace-sign, he puts the animal⁴ of Set, thereby declaring that he was an adherent of the god Set, not of Horus, the tutelary deity⁵ of the legitimate kings of the Ist and IIInd dynasties. Perabsen, however, bore the titles  showing that he held sway, or at all events claimed to hold sway, over all Egypt. The placing of the Set-animal upon the palace-sign indicates that this king was not only an adherent of Set, but that he was in origin a Set Chieftain, that he came from the Set, not the Horus, country. Now the god Set is from the Pyramid Age onwards often called  “Lord of *Ta-shema*” (e.g., *Pyr.* 204), and *Ta-shema* certainly meant in the Pyramid Age the whole of Upper Egypt from Lisht to Aswân.⁶ In the Archaic Period, however, the region under the influence of Set did not, I believe, extend south of Gebeleyn, for from that place up to Gebel Silsileh was the region of Horus.⁷

The chief seat of Set's cult was Nubt (Ballas), and it was from that city that he derived his common appellation, *Nubti*, “He of Nubt.” This must have been an important city in early times, for near it was the burial place of one of the earliest Ist dynasty queens, and sealings of the IIInd dynasty have been brought to light from amongst its ruins (Petrie, *Naqada and Ballas*, p. 65, and pl. lxxx, 28–35). The southern boundary of the original Horus kingdom, as I have said, was Gebel Silsileh, beyond which extended Bow-land. The northern boundary was somewhere between Esneh and Gebeleyn.⁸ The early capital of the Horus kingdom was Hierakonpolis. The country from Gebeleyn to Rifeh was mainly under the influence of Set, and to the north was the kingdom of the Reed () with capital *Het-nyswt*. The Set country from Gebeleyn to Rifeh was, I believe, divided up into administrative nomes by King Zoser. The great importance of Set in the Ist dynasty is clearly shown by the title of the queens:  “She who sees Horus and Set” (*R.T.*, II, pl. xxvii, 129), and this title proves that there was then no enmity between the two gods of Upper Egypt at that date.

Now at Hierakonpolis, the old capital of the Horus kingdom, have been found a series of monuments of the Horus-King Khasekhem, who was in all probability a contemporary of Perabsen. These monuments consist of two seated statuettes, one in limestone, the other in slate (*Hierakonpolis*, I, pls. xxxix–xli); also a granite jar, an alabaster jar, and a piece of an alabaster bowl (*ibid.*, pls. xxxvi–xxxviii); and, lastly, a fragment of a stone stele (*ibid.*, II, pl. lviii). All these monuments bear the name of Khasekhem, and, with the exception of the last-mentioned, bear inscriptions recording victories over rebels of the north. On the vases the vulture-goddess Nekhebyt of El Kab reunites for Khasekhem the symbolical plants of Upper and Lower Egypt with the legend “Year of Victory over the rebels of the north.” The two seated statuettes show the king wearing the white crown, and on the bases are figured heaps of dead, with inscriptions giving the numbers of northern rebels slain. On one statuette the number is 47,209, on the other 48,205.

These monuments, as Meyer (*Histoire de l'Antiquité*, Paris, 1914, p. 155) has recognised, show that the unity of the empire had been broken up for a time, and that Khasekhem reconquered the kingdom of the north.⁹ It was then that he united the two opposing peoples, the Companions of Set and the Followers of Horus, placed over his palace-sign the Set-animal by the side³ of his tutelary

deity the Horus-falcon, and assumed the name Khasekhemui. To make this reunification of the country secure, he took, just as Menes had taken in earlier days,¹⁰ and perhaps under somewhat similar conditions, a northern princess to be his queen. This princess was Nemathap, who has long been known from inscriptions in the tomb of Methen (Breasted, *Ancient Records*, I, p. 78), and is now generally recognized as the ancestress¹¹ of the IIIrd dynasty line of kings.

The preceding notes give all that is known, from contemporary sources, about the rebellion of northerners at the time of Khasekhem. But there is a much later inscription which, I believe, preserves a record of this war : this is the Ptolemaic inscription in the Horus Temple at Edfu, which is usually known as the Myth of Horus of Edfu. I do not mean to suggest that this later document is historically accurate in every detail, but I do contend that it contains, like most myths, much historical truth, and that it refers to the Set rebellion of Perabsen of the IIInd dynasty. My reasons for this view are the following :—

First, immediately preceding the text is a figure of King Zoser's vizier Imhotep¹² (Naville, *Mythe d'Horus*, pl. xi), facing to the right, and reading from a scroll as though he were actually reading a record of the war written in the lines of inscription in front of him. Behind the vizier stands the figure of a king with blank cartouches above him ; we cannot, therefore, determine who this king is, but, as he stands with Imhotep, he may perhaps be Zoser himself. In front of Imhotep stands a priest (*mnhw*), who is cutting up a hippopotamus. The hippopotamus is a well-known Setian animal,¹³ and here probably symbolises the country of Set, which Imhotep directed to be cut up, and the parts distributed among the gods.

Secondly, when the rebellion broke out, we are told that the Horus-king was with his army in Bow-land (Nubia) suppressing a rebellion there (Naville, *l.c.*, pl. xii, 1, 2). This statement may be compared with the record on a fragment of a stele of King Khasekhem (*Hierakonpolis*, II, pl. lviii), recording that king's conquest of Bow-land.

Thirdly, the outbreak of the rebellion is dated (Naville, *l.c.*, pl. xii, 1, 2) in the 363rd year of Horakhuti, "Horus of the Horizon." This is obviously an era dating,¹⁴ i.e., it gives the number of years from the establishment of the monarchy by the Horus-King Menes to the time of the outbreak of the Set rebellion recorded in the text. If we had accurate chronological data for the Archaic Period, it would be a simple matter to check this era date, but the Turin Papyrus is too mutilated to be of any real service, and the text of Manetho is hopelessly corrupt. Our best source would be the Early Annals of the Kings of Egypt, but of these only the Palermo, Cairo, and University College fragments remain. It is very unfortunate that there is no adequate publication of the Cairo fragments in Gauthier's plates¹⁵ : all accurate measurements have been omitted, so that it is useless to try to work out with precision¹⁶ the number of year-names in the various registers. But several tentative attempts to compute the original size of the Annals Stone have been made, and in my judgment Edward Meyer's restoration (Meyer, *Aegyptische Chronologie*, p. 197) is much the most satisfactory.

The first two registers of year-names give the Annals of the kings of the Ist dynasty.¹⁷ The third register of the Palermo fragment gives part of the Annals of King Neterimu of the IIInd dynasty, and the fourth register preserves the year-names of the latter part of the reign of King Khasekhemui.¹⁸ This last king reigned at least seventeen years. Now, according to Meyer's computations (made from a study of the Palermo fragment alone), the first two registers

contained 210 year-names, and the third 135, making for the first three registers 345 year-names. The Palermo fragment is placed by Meyer a little to the right of the centre of the entire block, so that the year-names of Khasekhemui begin about thirty year-names from the right-hand side of the entire block. Adding these thirty years to the 345 of the first three registers, we obtain a total of 375 years from the accession of Menes to the beginning of the reign of Khasekhemui. We have thus on Meyer's conjectural restoration a difference of twelve years between it and the era date at Edfu. Meyer's restoration, it must be remembered, does not claim to be absolutely precise, but, even if it were, the twelve years might easily be accounted for by the ancient chroniclers only taking account of the reign of Khasekhemui from the time he reunited the whole country, and not from the time when he, as Khasekhem, was fighting the Set usurper Perabsen. But however this may be, I think that we have in an era date of 363 years an important new fact that must be taken into account by any future student who endeavours to reconstruct the chronology of the first two dynasties.

There still remains one more fact in favour of dating the Horus-Set war to the end of the IIInd dynasty. The difficult title  first appears with King Zoser (*A.Z.*, 1900, p. 20). Sethe (*Mahasna and Bit Khallif*, p. 19) discussing a sealing of Neterkhet (Zoser), in which the sign  takes the place of the  name of later kings, says: "here Neterkhet being placed over the  may possibly mean Neterkhet who has conquered the god  (Set of Ombos). This would agree with the Rosetta translation *ἀντιπάλων νίπέρτερος* ("victorious over his enemies") for the royal title .

THE EDFU ACCOUNT OF THE HORUS-SET WAR.

Shorn of its fantastic etymologies and some unimportant details, the Ptolemaic account of the Horus-Set war runs as follows:—

In the year 363 of Horakhuti, the Horus-King returning from a military expedition into Nubia finds that a rebellion has broken out in Egypt (Naville, *Mythe d'Horus*, pl. xii, 2). He lands in the *Uthes-Hor* nome, where, before Edfu, he attacks the rebels, who are routed and flee northwards (pls. xii, 3–xiii, 8). The Horus-King pursues them to Zedmet, south-east of Thebes, and defeats them a second time (pl. xiv, 3). The rebels then retire to the north-east of the crocodile nome (pl. xiv, 5), and here another battle takes place, many of the enemy being slaughtered. Still flying north, the rebels are defeated in the Hermopolite³⁰ nome, and a battle is fought at Hebnu (pl. xiv, 8–13), where again many of the enemy are slain. Up to this point in the record the enemy are described as hippopotami and crocodiles (both Setian animals), but now they are called *smayw nt Set*, "Companions of Set" (pl. xv, 1), and the Horus-King engages in battle and defeats them, first on the water of the Oxyrhynchite nome (pl. xv, 1–3), where they are led by the Set-King himself (pl. xv, 5), then at *Per-rerhehw* (pl. xvi, 2), and at Ast-abt on the southern side of Herakleopolis (pl. xvii, 1–2). The enemy is then driven northwards to Heliopolis (pl. xviii, 1), and finally defeated at Zaru on the eastern frontier of the Delta (pl. xviii, 1–3). The Horus-King then returns south, goes into Nubia, and overthrows the last remnants of rebels at Shasheryt (pl. xviii, 6). He then

celebrates a great festival at Edfu (pl. viii), and later divides up the country that had been under the influence of Set, and distributes it amongst his own followers (pl. xi).

NOTES.

1. There is no evidence whatever that Sekhemab was the Horus-name of Perabsen, as stated by Sethe (*Beiträge zur ältesten geschichte Aegyptens*, p. 36) and Gardiner (*Abydos*, III, p. 39). A fine sealing of this king is published in *Abydos*, III, pl. ix, 3.
2. This was originally suggested by Naville (*Rec. de Travaux*, XXIV, p. 118), and, in spite of Sethe's criticisms (*Beiträge*, etc., pp. 34–35), I think it most probable.
3. A fragment of a bowl with Horus-name Nebra almost erased, and re-inscribed with the name Neterimu, was found in the tomb of Perabsen (R.T., II, viii, 12). A stone bowl found in the Mykerinos temple at Gizeh, bears the names of Hetepsekhemui and Nebra (Borchardt, *Klio*, ix, p. 488).
4. In *Klio*, xii, p. 397 ff., I identified this animal with the wart-hog, but since that paper was written I have accumulated much evidence to show that the Set-animal was in fact a pig, probably an extinct species, from which the domesticated animal was originally derived. On sealings of Perabsen (R.T., II, xxii, 178) and Khasekhemui (R.T., II, xxiii, 199) the deity is represented in human form with Set head, and is named Sha. At Dêr Rifeh (Griffith, *Siut*, pl. 18) Shau is described as "Lord of Shashotep," a city name which means "Pacifying (the god) Sha," and this city was the capital of the -nome. (Cp. the name of the Nubian city Sha-s-heryt, "Terrifying Sha," where the last remnant of the Set rebels were defeated (see p. 43). Now *Shau* is a well-known Egyptian name for swine, and in the *Book of the Dead*, ch. 112, it is said that Set transforms himself into a black *sha*. The greyhound-like appearance of the Set-animal might be thought to militate against any identification with a species of pig, but several correspondents have pointed out to me that when the domesticated variety runs wild it reverts to a thin long-legged greyhound-like creature, and one variety in Ireland is actually known as the "Irish greyhound pig" (see G. Rolleston, *Scientific Papers*, II, p. 541). The erect tail is a very characteristic feature of many species of *Sus* when they are at all angered. Often on Egyptian mounts the Set-animal is represented with a feathered arrow tail (!), and Mr. Winlock has drawn my attention to the following passage in Darwin's *Variation of Animals and Plants*, Ed. 1905, p. 95: "The wild boar of India is said to have bristles at the end of its tail arranged like the plumes of an arrow." Cp. Note 13 below.
5. On the Horus title of the kings of Egypt see Newberry, *P.S.B.A.*, December, 1904, p. 295 ff.
6. For conclusive evidence on this point see Moret, *Une liste des noms de la Haute Égypte*, in *Comptes-rendus*, Acad. des Inscr., 1914, p. 565 ff.
7. The nome of *Uthes-Hor*, "the raising of Horus," with Edfu as its capital, extended some little distance to the north of Edfu. Then came the  nome. The early capital of this nome must have been  *Nekhen*, Hierakopolis, for the city name is written with the sign of the

nome cult-object. Later the capital was transferred to Nekheb, El Kab, on the opposite bank of the river. That this nome extended northwards as far as Gebeleyn is indicated by the titles of Paheri, who was Mayor of Nekheb and of Ani (Esneh), and as scribe of the accounts of corn "filled the heart of the king from Per-Hathor to El Kab" (Griffith, *Paheri*, pls. iii and ix, I, 9). Per-Hathor = *Φαθυπίς* at Gebeleyn (Griffith, Ryland, *Demotic Papyri*, III, p. 422).

8. Trouble in the north was already brewing under Neterimu, who in his thirteenth year records the "hacking up" of two northern cities (Palermo Stone, Obv. register 3, entry No. 8).
9. It should be noted that in the titles of Khasekhemui the Set-animal and the Horus-falcon, as well as the Vulture and Uraeus in the *Nebty*-title face one another.
10. Newberry, *P.S.B.A.*, 1906, Feb., pp. 69–70.
11. A title which occurs on her cylinder seals, "If she says anything, it is done for her," is found also with Queen Mertytōtē, the ancestress of the IVth dynasty (E. de Rougé, *Inscr. hiérogly.*, I, 62); with Queen Aahmes, ancestress of the XVIIth (Naville, *Deir el Bahari*, pl. xliv), and with Satra, Queen of Ramses I (Maspero, *Etudes de Myth.*, IV, 329), ancestress of the XIXth dynasty.
12. See Sethe, *Imhotep der Asklepios der Aegypter*. Leipzig, 1902.
13. Apet (= Taūrt) was the hippopotamus goddess of Thebes, and in Ptolemaic times there was a small temple erected to her in that city. On her name see my note in *P.S.B.A.*, 1913, p. 117. Set himself is sometimes represented as a hippopotamus (Lanzone, *Diz. mit.*, pl. ccclxxx; Eusebius, *præparat. evang.*, III, ch. 12). The female hippopotamus was also named *rert*, and this name in the light of note 4 above is interesting, for swine were called *rert*, Copt. *pirp*.
14. The only other Ancient Egyptian era dating is the 400th year of Set on the Tanis stele of the reign of Ramses II, in the Cairo Museum (*Rev. Arch.*, XI (1865), pl. iv).
15. Published in *Le Musée Égyptien*, III (1915), pl. xxv.
16. Borchardt's attempt (*Die Annalen und die zeitliche Festlegung des Alten Reiches der Agyptischen Geschichte*, Berlin, 1917) has been ably criticised by Peet in the *Journal of Egyptian Archaeology*, VI (1920), p. 149 ff.
17. The Cairo fragment (*Le Musée Égyptien*, III (1915), pl. xxv, gives in register 1, King Zer Athi, and in register 2 I thought I could read the name Az-ab Mer-pa-ba, when Sir Gaston showed the fragment to me in 1914. The second register of the Palermo fragment, as Wainwright and I proved in 1914 (ANCIENT EGYPT, 1914, p. 148 ff.), gives the annals of Wdymw (Den).
18. Following Schäfer (*Ein Bruchstück*, etc., p. 27), I at first believed (Newberry-Garstang, *Short History*, 1904, p. 27) that the entry No. 4 of the fourth register referred to the birth of King Khasekhemui, but Sethe has since shown (*Journal of Egyptian Archaeology*, I (1914), p. 235) that it really records the making of a copper statue (*mswtbya*) of Khasekhemui. The first six year-names of this register therefore refer to the reign of Khasekhemui, and not to his predecessor.
19. Seymour du Ricci (*La Table de Palerme in Comptes rendus : Acad. des Inscr.*, 1917, p. 107 ff.) computes 275 year-names for the first three registers, and

thirty more in register 4 to the accession of Khasekhemui, making 305 years from Menes.

20. In Naville's edition of the inscriptions, the important text that runs along the base of the wall upon which the myth is recorded has been omitted. It is printed by E. de Rougé (*Edfou*, pl. lxxxv), and gives a summary of the long text above it. After the record of the defeat of the rebels north-east of the crocodile nome, the longer text says that they fled to the *pehu uaz-ur* (pl. xiv, 7-8, cf. xv, 1) ; this is not the sea, but the *name* of the lowlands of the crocodile nome (see de Rougé, *Edfou*, pl. xix). The summary gives the names of the places where the battles were fought in the following order : Edfu, Zedmyt to the south of Thebes, $\Delta \sqcap \triangle \otimes$ on the east of the Crocodile nome, then Wnt (Hermopolis), Hebnu (Minieh) $\square \square \square \otimes$, Ast-aby, Herakleopolis magna, the western and eastern *Mesens*, and, finally, Shasheryt in Ta-Wawat.

PERCY E. NEWBERRY.



EGYPTIAN WORDS REMAINING IN MODERN USE.

(Continued from p. 75, Part III, 1921.)

אַנְקָרָה, B., **גַּנְקָרָה**, S., دُوْجَل “anchor.”
אַלְקָה, B., **גַּלְקָה**, S., “ring.” Late Ptolemaic. **אַלְקָה** v. Griffith, *Catalogue of Demotic MSS.* Rylands, Vol. III, Glossary, p. 370, late Egyptian

مَقْرَطٌ فِرْطٌ adj., Classical Arabic; حَلْقٌ حَلْقٌ. *whip*, B., *whip* “ أَعْشَة ”.

أَعْنَدِي, B., **أَعْنَتِه**, S., The West; the land of the dead, *وَادِي الْأَعْنَدِي*, *وَادِي الْأَعْنَاتِه* = داهية توديك الاعندي “an Evil that sends you to Hades.” This expression is becoming rare, and is used only in certain circles.

أَنْ, أَنْش “what?”  and **أَنْ**, B., **أَنْ**, S. Very common in the Fayum and Beniseuf.

بَلْمِيمِي, B., بَلْمِيمِي “to bluff in words,” “to prevaricate,” “to speak in jargon”; name of the Blemmyes, who spoke a language not understood by the Egyptians.

انا اتبشبشت عَيْدَةٌ شَبَشَ، يَاشْ
“I was wetted with water.”

BODH, B. and S., "to be void"; "to be empty"; used metaphorically in the sense of loss: طَلَّبَنَا مَشْيَدٌ, "We turned out empty handed," etc.

bep, B. and S., ل ه, "fall down"; و in saying نزل "fell down," "dropped down."

врхъ, "lightning," برق. These two words are probably of an early Semitic root. All words marked with an * are probably of similar origin.

**ειορν* "stag," أيل $\ddot{\epsilon}\text{يَل}$.

***εαρων**, **εαρων**, **εαρων** “to burn.”

أونى آونى يا طاحون الزحالية : in the song طاحونه .” mill.

etnⁱ, بـ, "milk," حـوـل in the song: حـمـار, دـنـي, "donkey" ; حـمـار in Upper Egypt—calling for the animal دـنـي.

ENKOT, B., "to sleep," in the expression **ENKOTR** = أَنْكُتَكْ "I make you fall down"; or أَنْكُتَ نَامْ "lie down and sleep."

*ΘΑΛΙC, θαλις "sack."

***θάλ**, *b* “hill, mound.”

ءاڭ, B., تاڭ, S., تاڭتاڭ, تاڭتەق, B., ئاڭتەق, S., " spit "، تَفْ، تَفَقْ

օվի, օվով, B., **ԹՈԶ**, S., **ծառ**, “drunk,” شرب طاتشخ, very common expression meaning “drank until he became drunk.”

μαρτου, B.,     “eat,” imperative, in giving food to babies.

Also, **úmwoor** اعمور, for offering water to babies.

NOTNOT,  , "baby, anything small and young."

نور, B., "big sun," "strong sunshine," نَفَرْ. "Do not walk in the strong sunshine," **عاتمتشيش في الـنـفـر**. It is interesting to notice the x becoming a ة in Arabic. The Coptic word is **nox**, "big," **ph**, "sun."

ՕՐՈՒՆԻ, B., ՚ԱՐԴՈՒՆ. ՚ԱՐԴՈՒՆ, عوانیه, “a big date palm.”

πέχο, B., **πέχα**, S., **πέχα**, B., ἄξω, "the handle or the edge of a plough."

አፍሪት, አፈሪት,  ,  ,  late Egyptian:  , “afrit,” is used to frighten someone.

تپی، S., **تپی**, **تپی**, “flea,” often called in Arabic **بَيْبَيْ**, particularly when talking to babies. The fact that most addresses to babies remain in Coptic until to-day is most significant, and means that the Coptic language has lingered long in use in private homes.

*φαψ, παψ, παψ, φεν, فَسْ, “trap,” root (?)

پورج, **پورجی**, **فورج**, B. and S., "to stretch out"; بُرْش a kind of small mat used in many ways.

*п^иот, S., ф^иот, B., ^и, “jump,” “run,” □ Δ.

***բաշտ**, **باغ**, “garden,” “park.” Common in the names of towns, **Եղիշե**, **Տերթու**, etc.

спат, спате, سَدَاطَةٌ “a bunch of dates.”

**cōhēn*, *cāhēn*, *cahēn*, “to defile, to dirty.”

cast, caste, "heat," صيد طالع حامٍ.

*  (Ebers, XLVII, pp. 12, 13), صداع, "migraine."

ceo, B., **ceor**, S., سَيْءَةٌ,  "to drink," شرب; in Asiut, in calling for water they say (شرب).

 סְבִיר, **סְבִירָה**, **סְבִירָה**, **סְבִירָה**, **סְבִירָה**, “boundary.”

TOPI, *as in* "hoe."

q̄oɔci = ^{ω̄} “ pick-axe.”

الطبخ تكتك حمض نكك " gone bad " ; for food,

θεσμός, **τάσμα**, "to invite," طمحة, دعوة, "invitation."

†^{ταυηίρι}, دميرة, “inundation,”

τοιι, طمي “the Nile mud.”

τελι, **τεοιι**, اشطوم, “dam,” ; different from στώμα.

ταρκε, شرافقى, “low Nile” ; deficiency (of water).

τεροις, “wood for burning,” شراثن.

τηιη λελοι, “small boy,” شملول, “dandy,” “young man.”

τεи, شن,  , “blow the nose.”

ταιри, **τωири**, خراء, fæces, in the expression يېھر, “having diarrhoea.”

  دل, **خليه**, شايه, “the shirt of a baby.”

τιр, صير, “small fish” ; also in the sense of acid they say, حادق صير, “very acid.”

τалог, هلوس, “spider’s web.”

τахас, هجاس, “chatterbox.”

так, حرال, “by your side.”

(To be continued.)

GEO. P. G. SUBIY.

REVIEWS.

The Palace of Minos at Knossos. By SIR ARTHUR EVANS. Vol. I. Sq. 8vo, 721 pp., 8 pls. coloured, 11 pls., 542 figs. and map. 1921. (Macmillan.) 126s.

The harvest is now put into our hands of all the work begun more than twenty years ago in Crete, and the first volume we hope will be soon succeeded by the two other volumes which are promised. This is far more than an account of Knossos, as the results and objects found by other excavators elsewhere are incorporated, to complete the material of each period, thus rendering the work an entire view of Cretan civilisation. Here will be stated an outline of the work and its relations with Egypt especially.

It is truly said that this was a pioneer work. There was very little known of mere loose objects, and there was no pre-Hellenic building which could serve as a pattern for the excavation. The whole of the sequence of civilisation had to be worked out from the material as it came to light. After a preliminary sketch of the general connections of Cretan civilisation with other lands, there is a first chapter on the neolithic period. The series of superposed palace ruins are really a terrible encumbrance of a great neolithic site of the first importance. Even on the shortest dating of the palace period, the neolithic would in proportion extend to 8000 B.C. This great mass of 23 to 26 feet depth of ruins contains the early history of civilisation, perhaps more completely than elsewhere. Though the later remains above it must be preserved, yet it might be possible to tunnel it at different levels, and recover the stratified series of deposits. So far only a few pits have been sunk. From these the lowest stratum yielded polished stone implements, and pottery with a good burnished face. In the middle strata is found the beginning of the incised decoration, some with white filling; figures of animals appear, and human figures with stump limbs and heads, mostly squatting women. On some of these is the zigzag line pattern so usual on the prehistoric statuettes of the first period in Egypt. The figures are thus placed in relation to those from the Aegean region. The later period at Knossos is marked by the pear-shaped and orange-shaped stone maces, like those of the second age in Egypt. Thus we may take as contemporary:—

<i>Knossos.</i>	<i>Egypt.</i>
Early neolithic.	.
Middle neolithic.	First prehistoric age.
Late neolithic.	Second prehistoric age.

The ages in which metal was used are divided into Early, Middle and Late Minoan, roughly corresponding to Old, Middle and New Kingdoms in Egypt, and each age is divided into three parts, numbered I, II, III, according to the well-known system of the author.

The Early Minoan I is marked by polished black ware, as found in the Ist dynasty at Abydos, bowls on stands as in the IIInd dynasty, a chalice apparently copied from a lotus cup (19 D.), globular jugs with long spouts, and heavy stone bowls imported from Egypt, beside imitations of such.

In the second age (E.M. II) the main material is from the cemetery of Mochlos. It is remarkable for the beauty and variety of the stones, which are, however, all soft, limestones and steatite, and not hard silica minerals as in Egypt. The pottery is of cloudy colouring of black, orange and red, varied by oxidation in burning, like prehistoric Egyptian ware. Conical cups with short spouts resemble the Old Kingdom forms, and cups on stems are like the cups of the IXth dynasty. Imitation rivets, copying metal ware, were similar to Egyptian of VIth dynasty. The double spouts of the IIInd and IIIrd dynasty were copied, as also the bowls with deeply curved lip, "carinated," which are of the IIIrd-Vth dynasties. A marble vase is taken from the form in the VIth dynasty.

The third period (E.M. III) was one of deterioration. A great domed chamber, cut in the rock, is the prototype of the "Treasury" tombs. Painted pottery now became much commoner than stone vases, and spiral ornament begins to appear. This was probably preceded by the earliest spiral in Egypt, of Zed-ka-ra in the Vth dynasty. But it is not regularly adopted till the Xth or XIth dynasty. We may agree with Sir Arthur in supposing that it came from the north by way of the Cyclades. Along with the spiral comes in the squared form, the "fret" or "meander" pattern. The Cretan adaptation of button-badge patterns from Egypt shows that they must belong to the VIIth dynasty; the pattern is degraded, and the original did not start till late in the VIth.

The period of Middle Minoan I is especially the Age of palaces (M.M. I). Upon the blocks of stone are many signs, referring to the quarry or the destination; we shall notice these below. Of this age is the substructure of a great square tower, built in a cellular form with deep blind chambers, which were filled up to make a high platform. It is 46×51 feet, which is much less than the platforms of forts at Daphnae (140 feet) or Naukratis (190 feet), but it belongs to the same system, which was expanded later. The drains of the palace are of the earliest laying out. The pipes were 30 inches long, and 5 inches tapering to 3-inch bore. On the narrow end was a stop-flange outside, and in the wide end an internal collar, so as to give a wide bearing on the flange. Some had two pairs of handles outside, in order to move such heavy things safely. Pottery modelling of figures was common. A new type is of jars with two handles, either joining the neck vertically, or rising from the shoulder at both ends. Painted imitations of stonework are common, and foliage decoration begins to be freely used. Scarabs are first imitated in this age, and are of the style of the XIIth dynasty.

The next stage (M.M. II) is marked by the laying out of the palace plan on a large scale. The great drains were built of stone, 30×15 inches, catching the rain from the open courts and light wells, into which the roofs discharged, and also draining the latrines. The pottery was highly developed. There are enormous oil jars with knobbed pattern and taller than a man, and there is also an egg-shell ware, with striking decoration and brilliant colouring. This pottery was also adapted to imitate metal vases, in form and polish. The patterns are the most perfect and brilliant of any period. From the fragments found at Kahun, and the vase from Abydos, this style is dated to the end of the XIIth dynasty. Towards the close of this period the leaf patterns become mechanical repetitions of a formal kind. Seals with hieroglyphs of Cretan origin were much used. A good dating point is gained by a diorite seated figure of Egyptian work

found with pottery of this age at Knossos, and belonging to the late XIIth or XIIIth dynasty. It represents Ab-nub, born of Uazet-user. The serpent of Uazet is placed on a stand to show that it represents a god, like a falcon on a stand for Horus.

The relations of trade between Egypt and Crete lead to attributing the great harbour works at Alexandria to Cretan enterprise. These works were found by M. Jondet, Chief Engineer of Ports, and mapped by him. He published them in 1916 at the *Institut Égyptien*. They comprise an inner and outer breakwater in front of Ras et Tin, and running west, and a back breakwater behind, enclosing a harbour now over 20 feet deep. Before the sinking of the coast this would not be over 10 feet, but the ancient shipping was of very light draught, as it needed to draw in close to shore. Before the Pharos island was joined to the mainland by Alexander it would be a convenient point for traders, like Hongkong, clear of the Egyptian shore. The basin of the harbour was about 150 acres in area ; the front of it was outside the present harbour, and the back of it along the present breakwater and beyond the bend of it, on to the islands and shoals.

A notable view of the life of this age comes from the picture; of houses, modelled in glazed pottery and inlaid in some general scene, which included trees, water, animals, warriors and negroid figures. The houses were of three or even four floors, the windows sometimes divided into panes. Most were built of stone courses, others of wood, with round poles for flooring and partitions.

The latter stage (M.M. III) of this great period was marked by a catastrophe, which was "so general that the palace sites both at Knossos and Phaestos may, partially at least, have remained for an appreciable time uninhabited and have existed as mere heaps of ruins." Though in writing, seals and architecture, changes appear, yet these are more as developments than as new motives. It seems that the break was caused by a people of lower ability, who did not bring in new ideas. There was widespread conflagration and plundering of the palace. The renewed life here, of M.M. III, is dated by the alabaster lid with the name of Khyan, belonging to the XVth dynasty. There was a distinctly later taste in the pottery, applied modelling stuck on, and sprays, which remind us of the style of 1870. A greater degree of luxury appears in the inlaid crystal, ivory and gold, gaming board, the abundance of coloured glaze ware for inlay, as the goats, cows or fish (long before Akhenaten), and the free and delicate drawing of the frescoes. A weird variety of monsters were devised on the seals, and a new decoration of great lily plants rises life-size up the sides of the tall jars. The religion is shown in the figures of the snake-holding goddess, the marble cross and the emblem of the double axe mounted on a stand. The writing changes to a more cursive form of the earlier hieroglyphs, due to a free and common use of reed pens. Beyond this the volume does not go, the late Minoan stages and other subjects are for future issue.

Some general matter remains to be noted. The strong artistic instinct of the Cretans led them to decorate pottery and walls with a great variety of plants and figures. To these no magic purpose would be assigned. Why then attribute a magic intent to the less perfect decoration by other peoples. Let us credit lower races with having aesthetic desires, such as can undoubtedly be observed at present. The examples of multiple beads from Egypt, Crete and Britain are well illustrated, but it might be added that the exact fabric of the Wiltshire beads is only paralleled in the multiple beads of 1210 B.C. in Egypt.

The signs used by masons on blocks of stone are nearly all well known about the Mediterranean, where they probably had regular sound values. Out of 15 single signs, 13 are known in Spain, 11 in Egypt, 4 in Karia, 3 in Lydia and 2 in Lachish. In the fuller list of all the advanced linear signs in Crete about 36 are geometric. Of these 27 are known elsewhere, 25 in Egypt, 16 in Spain, 12 in Karia, 8 in Lydia, 6 in Lybia, and 5 in Lachish. Thus the connection with the opposite ends of the Mediterranean is closer than with the neighbouring Asia Minor coast. With regard to chronology it is to be regretted that the knowledge of the Egyptian dating seems to have been forgotten, and the consistent system which they have left us is regarded as a mere supposition of the present time. The Berlin dating here followed is a total impossibility; the XIIIth dynasty alone, of well recorded kings, would overlap the XVIIIth on that supposition. Not a single advocate of the reduced dates has ever attempted to show how the known reigns can be compressed into the time.

It will be most desirable to trace out the system of design of the buildings, what parts were laid out to measure and what were of mere resultant lengths. So far as a few measures are given, the standard seems to have been the Persian *arish*, divided into three feet of 12'83 inches. This was in use in Asia Minor. The weights also must be published, especially an accurate weighing of the great octopus standard.

A great problem is that of the future of Knossos. It is largely built of gypsum, which is very soluble and was protected anciently by roofing or lime plaster. Without any plaster it will now all perish in a few generations. The ancient construction has been largely repaired by modern work, needful to put the place into accessible state. This will, in a century or two, be blended and confused with the original work. To keep the site really safe it needs much more reconstruction and roofing. Left as it is it will largely perish, without the protecting coat of earth that has saved it for 3,000 years.

Les Indo-Européens. By ALBERT CARNOY. 1921. 256 pp., 16mo, 7 frs. (Vromant, Bruxelles.)

This work deals with the linguistic point of view, set out by Max Müller sixty years ago. The author disclaims at once the idea of an Indo-European race being defined by the language, yet little or nothing is said as to the various racial sources of the peoples who adopted the language. There is a chapter on the centre of dispersion, but beyond stating that it included Central Asia, Russia and Germany, nothing more is attempted. Tilak's work, which would place the Aryans at least as far north as Tobolsk, is not mentioned. The increase of cold in Scandinavia at the beginning of the bronze age is noted, but the connection of that with the submergence of the same period should be mentioned. In general the physical side of the subject is hardly developed, but the linguistic evidence is fully described with examples dealing with each branch and most dialects of Indo-European speech. The evidence from community of words is classed under all the various heads of zoology, dwellings, utensils, food, clothing, arms, &c., and the beliefs and mythology are fully described. This is a useful outline of the subjects with which it deals.

The Septuagint and Jewish Worship. By H. ST. J. THACKERAY, D.D. 8vo, 143 pp., 1922. (*Schweich Lectures, Milford.*)

This course of British Academy lectures is mainly occupied with the influence of liturgical use on the minor books of the Old Testament, the incorporation of rubrics, and transformation of such into parts of the text. The results of the author's study on the Graeco-Egyptian version, known as the LXX, concern us here. He remarks on its value as being made from MSS. older than the formation of the orthodox recension of the Masoretic text, and far before any remaining MSS. of that. It is very difficult to counterpoise the value of two opposite kinds of material. In the received Hebrew text, late construction, but excessive care; in the Septuagint, earlier construction, more varied material, but lack of precision and careless transmission. The Pentateuch was first translated, by a small group, in the third century B.C. The language is the popular Greek, and not literary, hence it was for general use and convenience, and not done for library purposes. The familiarity with Egypt shows that it was prepared there. Next the Prophets were done by another group in the second and first centuries. To them were gradually added the Psalms and lesser books, translated by individuals, and more as free paraphrases than as formal renderings. The whole was then subject to various editing, and versions made in the Asiatic schools of the second century A.D.; in fact, the translation of some parts seems, from peculiar words, to have been made in Asia Minor. Of the earliest MSS. the Vatican is the best, the Alexandrian (Brit. Mus.) being of mixed origin.

Synoptic Series of Objects in the United States National Museum Illustrating the History of Inventions. By WALTER HOUGH. 8vo, 47 pp., 56 pls. (*Proc. U.S. Nat. Mus.*)

Though this collection scarcely touches on Egypt, it is of great interest for comparison, as showing independent lines of invention in America, covering the variety illustrated in the University College Catalogue of Tools and Weapons of the Old World, and continuing the evolution down to the present day.

Catalogue of Textiles from Egypt. Vol. II. By A. F. KENDRICK. 8vo, 108 pp., 32 pls. 5s. (*Victoria and Albert Museum.*)

This is the continuation of the catalogue noticed in *ANCIENT EGYPT*, 1921, p. 57. It deals with "The period of transition and of Christian emblems." The transition is that from Graeco-Roman to Coptic art, during the fifth and sixth centuries. The old skill was waning, the old notions were being discarded, the sense of ordered disposition was giving way to the attraction of bright colours. The catalogue begins with many examples of woven crosses. On comparison with the accurately dated examples of forms of the cross, the dates in the catalogue average 150 years too early (see *ANCIENT EGYPT*, 1916, p. 103). This suggests that all these textiles have been dated a century or two too early; it does not appear that there are any absolutely dated examples as a basis. A generally later dating would accord more nearly with Gayet's statements. It is well that the materials should be so clearly illustrated and described, and this will long serve as a book of reference on the patterns and methods of work.

Capitals and Bases: a theory of their evolution. By F. WELMAN. 6 pp. (Journal of Royal Institute of British Architects, 22 October, 1921.)

This theory mainly refers to Greek forms of capitals, but also includes some of the Egyptian. As it is a new possibility it needs consideration. The idea is that a wooden architecture is made more durable by damp-proof layers of bitumen, and that the architectural details of design have originated from such bitumen layers retained in place by cloth wrappings and cords. Thus the features of the Doric capital and Attic base are well accounted for, and, less distinctively, the Ionic and Corinthian capitals. The evolution of forms is a difficult subject owing to our ignorance of the series, of which we only know the final product, and here and there a few of the earlier stages. This is as true in architecture as in zoology.

The basic question is where the forms were developed, and whether bitumen was known there. So far as we know there is no trace of bitumen used in any Mediterranean country for building purposes. Can the forms have arisen farther east. In Assyria there is something like the volute (Botta, Pl. CXIV), and in Persia is the prototype of the Ionic echinus. The latter, however, is obviously a leaf pattern in the long drooping form at Persepolis (dieulafoy II, xxi), otherwise there does not seem to be any oriental source for the forms attributed to the use of bitumen.

In the dry climates of Egypt and Greece there would not be the same inducement to use damp-courses that we have in the north. Yet the forms suggest a soft material held in place. May it be that the purpose was to keep a bedding material in place to equalise pressure, and that clay was so used. The suggestions of origin of the features of Egyptian architecture is not in harmony with materials used in ancient or modern times, reeds, maize stalk, mud, cord, lotus, papyrus stem and palm leaves. Nor will the suggested origin of the spiral accord with the earlier examples as surface decoration on small objects. The fret is the spiral squared up in weaving patterns, as seen on the earliest example, on the borders of dresses of pre-Persian statues.

Die Cheopspyramide. By K. KLEPPISCH. 8vo. 74 pp. 1921. (Oldenbourg, München.) 15 marks.

This work by a Polish engineer deals mainly with the external form of the pyramid, and the various mathematical properties that co-exist in that form. Here we meet the old difficulty, how many such properties are accidental? or did the constructors select the form from a wide knowledge of such properties showing them that this form combined many different ideas?

The proportion of the radius to circumference, or approximately 7 : 44, for the height and circuit of the pyramid is accepted; but the author takes up the old and erroneous measures of the base in order to make out that the slope + $\frac{1}{2}$ base = 1,000 English feet. Really the actual measures give 11,871 to 11,888 inches for this amount. Wiping out this, there remains principally the mean proportional relation of $\frac{1}{2}$ base : height :: height : slope; which results in many relationships, such as area of face = area of height squared; or base area : face area :: face area : whole area base and faces. Another proposal is that, taking the height as 280 cubits and $\frac{1}{2}$ face as 220, the slope is 356.090, or slope + $\frac{1}{2}$ base = 576.090, almost a regular number, 24². It seems very unlikely that such relations determined the Egyptian to select the radius and

circle proportions. That the Meydum pyramid is 7 and 44×25 cubits, and Khufu's pyramid is 7 and 44×40 cubits gives the strongest reason for accepting that on the originating purpose ; all else is therefore only coincidence.

The Origin of Letters and Numerals. By PHINEAS MORDELL. 8vo. 71 pp. 1922. (Philadelphia, 4137 Leidy Ave.) 2 dollars.

This essay deals with the Sefer Yetzirah, a mystical tract on the nature of letters. The author distinguishes an early edition, which is pre-Talmudic, of about 600 words, and later editions with targums, of two or three times the length, which may be of the fifth to ninth century A.D. Apart from the Jewish interest in the mystical allusions, this tract is of general interest regarding the Semitic alphabet. According to the original edition, the alphabet consisted of ten double letters which had modified values ; *aleph* (e and o), *beth* (b, v), *gimel* (g, j), *daleth* (d, dh), *vau* (u, w), *kaph* (k, kh), *pe* (p, f), *resh* (r, gh), *shin* (sh, zh), *tau* (t, th) ; the other twelve letters had single uniform values. Thus a total of thirty-two letters is reached. The Sefer states that the tetragrammaton Yhvḥ consisted of vowels, so that all the letters rendered as vowels in western alphabets were also recognised as vowels in Hebrew. It was not till mediaeval times that the consonantal view came in. The modern values according to Mordell's comparisons are :—

	<i>aleph</i>	<i>yod</i>	<i>vau</i>	<i>'ain</i>
Sephardic (Spanish)	a	e, i	o, u	
Ashkenaz (German)	e, o	i	u	a

The Svastika and the Omkīra. By HARIT KRISHNA DEB. (*Journ. Asiatic Soc., Bengal, N.S., XVII, 1921, No. 3.*) "The syllable *om* . . . is part and parcel of the Vedic religion." As it is pronounced with a long ō, the author suggests that the sign for o (a "pothook" with square ends) was duplicated, one across another, and so originated the *svastika*. At first sight this may seem merely a guess, but it is fortified by other evidence. The *svastika* goes back to Panini, in the VIIth century B.C., when it was a cattle mark ; another reference is well before 528 B.C., and it is on a gold leaf in a vase found with relics of Buddha. On Indian coins of Eran the *svastika* has the letter *m* added to each terminal, thus making *om*, and a variant of this is on coins of Ujain. Two of the Asoka edicts have corner marks of the *svastika* and letter *m*. Albiruni (1030 A.D.) states that an ∽ sign is read as *om*. Thus the connection of the *o* sign, *om*, and *svastika* is strongly indicated. The meaning of the *svastika* is "that which signifies well-being" or "brings blessing," like the *onkh uza senb* in Egypt. The earliest example known is on the spindle whorls from Troy, in the third city, about 1800 B.C. It is frequent on Greek vases about 600 B.C. Among some rather uncertain conjectures in the latter part of the paper there is a striking comparison of the names of Gilukhipa, sister of the king of Mitani, with Guruksepa, who was the third successor of Brhadbala, who fell in the Bhārata war about 1450 B.C., another Indo-Aryan link with Naharain.

PERIODICALS.

Comptes Rendus, 1921. March—June.

CAPART, J.—*Un mythe Égyptien dans le Roman de Renart.* In the XVIIth chapter of the Book of the Dead is the description of the combat of Horus and Set. For this combat the regulations described are like those of the judicial combat in the Romance of Petubast. The eye of Horus was injured, and was restored by Thoth, and then became *uza*, whole or healthy. The details of the combat between Horus and his uncle Set are the same as those in the fight of Renard and his uncle Isengrin. The animal gods of Egypt easily gave rise in their mythology to folk tales about animals.

Lettre de M. Montet à M. Clermont-Ganneau. This outlines the history of Byblos, *Keben*. As the port for obtaining timber for shipbuilding, it was essential to trade, and the pinewood from there was used for furniture. Various fragments of Egyptian monuments have been found there, the names are of Tahutmes III and Ramessu II. An earlier block, with scenes of a kneeling king offering to Hathor, is dated to the XIIth dynasty by the spelling of *Keben*.

A mosaic floor of a synagogue of the IIIrd century has been found about four miles from Jericho. The chariot of the sun is surrounded by the signs of the zodiac, and figures of plants and animals. The Jewish character is assumed from the Ark of the Law, the Holy Lampstand, and Daniel between the lions. The presence of figures would rather point to the building being a church, the subjects named being often found in Christian art.

July—October.

Rapport de M. Lacau . . . sur les travaux exécutés pendant l'hiver 1920–21. The Nubian temples are withstanding inundation, but the gate of Hadrian at Philae will need reconstruction, and the small temple of Tafah will need to be completely rebuilt on higher ground. At Denderah the whole surroundings of the great temple are being cleared. The lake and wells, and the mammisi are all cleared. The fore part of the latter was removed anciently to build a church, but the plan remains traced on the foundations. The protection of the roofs against rain percolating was most carefully provided for in the construction.

At Karnak, one of the most important excavations in the world, work has been resumed. M. Pillet has taken up the work left at M. Legrain's death, and the intention is to publish all architectural parts that can be considered as finished. A large clearance must be trenched deeply to see if any monuments lie under it before using it as a space for arranging and reconstructing the blocks of the Amenhetep temple and other buildings. The stairway of the great pylon has been opened up, and a row of relieving chambers found in the upper part.

At Saqqarah nothing had been done for seven years, and now Mr. Firth has renewed the work. It is first intended to clear the funeral chapels of the pyramids of the VIth dynasty, and then to clear around the mastabas to examine exteriors. The mastaba of Kagemna has a figure and texts upon it. On the south face small tombs were inserted in the Middle Kingdom, with statues of the deceased squatting at the base of the stele. The pit led to a chamber covered with figures of offerings; the funeral furniture included alabaster canopics of fine work, and many rock-crystal model vases left solid. The clasp of a gold necklace shows that jewellery had been buried here.

At Aswan the great unfinished obelisk has been cleared to 118 feet length, without reaching the end. At Thebes the sarcophagus placed by Hatshepsut in her cliff tomb in the Queen's Valley has been removed to the Museum, and stands by the side of her sarcophagus from the King's Valley. At Tuneh the sculptures of the tomb of Petosiris have been copied for publication.

At Athribis (Benha) a tomb has been found of a priest of the sacred falcon, of Greek period. An enormous limestone sarcophagus was built round with great blocks, on the ground surface. There was neither chamber nor pit, as the water level did not allow of sinking.

At Tell el-Yahudieh more Jewish-Greek steles have been found, many dated in the reign of Augustus.

November-December.

November 9. M. Montet found many alabaster vases at Byblos, one with the name of Unas (p. 332).

December 23. M. Montet found inscriptions of Menkaura, a colossal figure of Egyptian style, and fragments of two other statues (p. 363).

January-February.

M. Montet found a large group of things near a temenos wall: lions couchant and standing, cynocephali, scarabs, kneeling figures, flies, model table of bronze, bracelets and rings of bronze, gilt-bronze statuettes and a coin (illegible); a cup full of beads of rock-crystal and carnelian. In another place was a large quantity of alabaster vases and pottery. On one vase is the name of Unas, beloved of Ra, "over the lake of the Great House," supposed to be a royal lake, but *per oā* at that time might refer to a temple. On a piece of a vase is the *sed heb* of Pepy, and on a cynocephalus vase is the name of Pepy II. A vase of Menkaura goes back to the IVth dynasty; and still earlier is a cylinder, two inches long, with three gods upon it, naming "the lady of Byblos," the hieroglyphs of which are irregularly placed, as in the IIInd and IIIrd dynasties. There is a circular wall a metre thick, round a paved area; also a temple with four colossi before it, standing and seated; they are broken away above, but a head was found. There are no inscriptions, and it is supposed to be Phoenician. This is the last report issued, when the work was stopped in January by the rains.

Palestine Exploration Fund, Quarterly Statement, April, 1922. A cubical bronze weight from Petra, described by Mr. E. J. Pilcher, bears on it *Khamsheth* or "five," showing it to be a weight of 5 qedet, on the Egyptian standard of 140 grains. The form of writing is the Edomite Semitic alphabet, and it points to

trade from Egypt through Nabathaea as early as the sixth century B.C. There is also in this April number a summary of all the archæological work in Palestine by Prof. Garstang.

Metropolitan Museum of Art, Bulletin, Part II, 1921.—This is entirely devoted to a fairly full account of the excavations of season 1920–21. At Lisht—described by Mr. Mace—there was a pre-dynastic village with fragments of pottery and stone vases. A later village built against the side of the pyramid yielded stone figures, tweezers, rasps, harpoons, combs, like those from Kahun. Among these were incised black vases of Hyksos age, and one of the same family of buff pottery with birds and dolphins in dark red, outlined by white incisions. This is a new style of this Syrian pottery. There were also engraved ivory wands, and a weight of Senusert with the number 23 $\frac{1}{4}$ on it, evidently a converted weight, but the amount is not stated. As regards the pyramid of Amenemhat I there is great confusion, as blocks are found (1) with Old Kingdom reliefs, (2) from earlier work of Amenemhat I, (3) of the final temple, and (4) temple reliefs copied from older monuments. Under a corner of the pyramid was found a foundation deposit, exactly like that under a temple (*Abydos* II, p. 20). The tombs of four princesses proved to have been entirely plundered.

The copying work of Mr. Davis at Thebes has been devoted to the tomb of Neferhetep, which contains some well-known scenes (Wilkinson, Pl. LXVII).

The Theban excavations are described by Mr. Winlock. After finding the tomb with the magnificent set of models, the rest of that valley was thoroughly explored, but nothing further appeared. To the south was the platform for a royal temple, and the causeway leading to it, which ran across the site of the future Ramesseum. Only one small tomb—perhaps never finished—was found here, and the great tomb temple was never built, probably because the court moved away to a new centre. Some much later tombs were found, one being of the charioteer Atefamen, with three fully decorated coffins in a painted sarcophagus.

An entirely different enterprise was in the XIth dynasty temple of Deir el-Bahri. The work of the Exploration Fund had bared the foundations of six shrines of princesses, and tombs beneath four of them. But, strange to say, no search had been made for the burials beneath the other two shrines. On looking at the paving it was obvious where the pits were, by the sinking over them. On opening that of Oashyt her coffin was found complete, with the mummy and wooden statue, in a limestone sarcophagus. Outside, this was decorated with scenes like that of Kauit, now in Cairo; but inside, instead of being plain, it was also sculptured and painted with scenes. The wooden coffin is highly painted with rows of funereal offerings, and figures of the constellations, the thigh, Orion, and Isis. This is certainly the most splendid burial of the Middle Kingdom, in its furniture. The jewellery had, alas! all been robbed anciently. The sixth shrine, that of Mayt, proved to be of an infant. Some strings of beads were found in her wrappings with a cartonnage over the head, in a plain whitewashed box, in her coffin. Among the beads are some of blue glass, extremely rare in the Middle Kingdom. We may add that this year Mr. Winlock has found the foundation deposits of the temple. It is to be hoped that he will soon publish all of these finest products of the temple, the sarcophagi, the deposits, the wooden statue of the king (*ANCIENT EGYPT*, 1920, p. 33), and as

many as possible of the fine blocks of sculpture which crowded the dealers' shops during the previous excavation. This is necessary to supplement the publication by the Fund.

A search in the convents of the Wady Natrun has been made by Mr. Evelyn White, and plans and photographs secured. A quantity of leaves of early works were rescued, which belong to books previously obtained by Tattam and Tischen-dorff. Altogether this bulletin is the record of a fine harvest of new results, and we earnestly hope it will soon be followed by complete publication.

Annals of Archaeology. Liverpool, 1921.

GRIFFITH, F. LL.—*Oxford Excavations in Nubia.* This work was at Faras, a third of the way from Abu Simbel to the Second Cataract. The earliest object here was a drift type palaeolith of quartz, the only one known so far south. A village and cemetery of the end of the pre-dynastic age contained pottery which was entirely of the age before Mena. It is unfortunate that the absolutely dated series of pottery of the Royal Tombs is disregarded in calling this "proto-dynastic." A thin layer of ash and charcoal marked the settlement, which was probably of wicker booths. The pottery of distinctive forms is between 75 and 78 S.D. With this was also the soft black-bodied Nubian pottery with parallel incised lines, of the class which was brought down into Egypt after the VIth dynasty and after the XIIIth. The palettes were thin oval slabs of quartz. Copper adzes (mis-called chisels) and axes were found; also a cylinder seal of ivory of local design unlike the Egyptian, and beads of crystal, carnelian, garnet and serpentine, and ostrich eggs. So far as the skeletons could be discriminated, the men had axes and chisels buried with them; the beads, armlets and copper piercers were with women; the palettes were with both. These settlements of the late prehistoric age died out very soon in Nubia; various causes are suggested, but the most obvious would be that these were groups of the prehistoric folk driven out by the dynastic invaders, taking their goods with them, but unable to continue their old handiwork, and gradually becoming lost in the native population. This would account for the absence of anything belonging to the dynastic culture.

After this comes the Nubian civilisation contemporary with the Middle Kingdom, stated to range from the end of the VIth to the XVIIIth dynasty, the so-called C group. The graves were surrounded by a ring-wall of stones, filled up with sand and topped by slabs. The pottery was placed outside of the graves as offerings, as in Egypt (*Tarkhan II*, xiv-xvi). The contracted bodies are all on the right side, head between north and south-east, whereas the prehistoric bodies were—like the Egyptian—on the left side, head south. There was one instance of a dismembered body, with bones broken. There were armlets of shell, ivory, marble and alabaster; finger rings of ivory, horn and shell; amulets of a turquoise hawk, carnelian foot, silver *onkh*, and a rather geometric figure on a hemi-cylinder, of the usual post-sixth style. The beads were of gold, quartz, carnelian, diorite, steatite, shell and blue glaze. Patterned beadwork in squares was also found (the drawing has the heraldic shading reversed). A curious kind of pot is conical, about five inches long and one inch wide at the mouth; the inside is smooth as if it were a mould; these are like pots of double the size found elsewhere. Some such—but not all—have a hole in the bottom,

and have been thought to be tuyers ; they are too long for crucibles apparently, and have no trace of slag in them. Another suggestion is that they were moulds but there are no moulded objects of this shape and size.

Considerable remains of the New Kingdom were discovered. A temple to Hathor seems to have been built by Hatshepsut. Another temple was built by Tahutmes III, of which various blocks and fragments remain. A third temple was built by Tutonkhamen, which still shows half the columns of the forecourt, and nearly all of the hypostyle hall. Huy, the governor, built it at the request of his sister, who was head of the harem of the king. There is the greater part of a granite stele with figures of Tutonkhamen and a god. Lastly, there is a grotto of Ramessu II and the governor Setau, which may be a tomb, made for Merapu son of Pa-mer-ah. A new variation in transliteration appears in using *j* for *z* ; as many people follow the German use of it for *y*, it is confusing, and *j* is better omitted altogether, as it is so ambiguous. This report is very welcome, though eight years old, and the twenty-five plates record the main things sufficiently.

Annals of Archaeology, Liverpool, 1922.

MACE, A. B.—*The Influence of Egypt on Hebrew Literature*. The lack of interest in Egyptian literature is mainly due to the imperfection of translation, and loss of the spirit and rhythm of it. This is illustrated by a supposed future version of a sonnet of Shakespeare. The comparisons of Egyptian and Hebrew writings are set out in parallel columns—the Proverbs of Ptah-hetep with Ahikar, the Hymn to Aten with Psalms, Ptah-hetep with Proverbs, Ani with Proverbs, Khakheper-res-senb and the Song of the Harper with Ecclesiastes. Some of these comparisons were made in *Nile and Jordan*.

Other important articles on megaliths by Mr. Thurlow Leeds, and on Asia Minor, Syria and the Aegean by Mr. Woolley, do not touch on Egypt.

Journal of the Society of Oriental Research, Chicago, 1921.

MERCER, S.—*Egyptian Morals of the Empire*. This article is in continuation of two previous articles upon the earlier periods, which were noticed in *ANCIENT EGYPT*, 1920, p. 62. Regarding marriage, examples of two wives are quoted, but at Hagarseh six wives are represented ; the chief wife had no children, and this may have led to the large number otherwise (*Athribis*, vii). The sister-marriage, which was usual in royalty, is said to be of uncertain frequency in the lower classes ; it is often found in family records, though it was not usual. The habit of speaking of a wife or lover as a sister at least shows that it was an ideal, like first-cousin marriage in Egypt at present. The close family affection is noted, like that of the modern Oriental, and the emphasis on children being the gift of the gods, theophoric names being commoner than in early times. The ideal character was of a high standard, much above the actual standard of any modern country ; but there was, of course, a continual slipping away from it, especially in lax reigns, only to be compensated by an uncomfortable tuning up under an able ruler, such as Heremheb. (There is a strange allusion by the author to *coin* of that time, whereas there was no coinage till many centuries later.) Slavery was not unmitigated, and though slaves were sold and hired out, yet they could rise to wealth and power, as in modern times. The ideal of life was *maot*, truth or straightness, most prominently stated by Akhenaten “ living in

truth." Lying and deceit were reprehended, and there was a strong belief in honesty ; whether this was more effective than at present may be doubted. The modern Egyptian is remarkably honest to his equals, but has no feeling for his inferiors. We can, however, readily believe in the virtues of the Egyptian, as they are seen in many races at present—such as the North-American Indian—who have not much intellectual growth. One judgment of the author seems far too strong when he writes of "their excessive cruelty." The Egyptian was a very kind man, to whom the infliction of punishment was distressing, and there was a great delicacy of feeling about referring to any unpleasant subject (*Ptah-hetep*, 26 ; *Any*, 63 ; *Ptah-hetep*, 29). The only signs of cruelty are in the treatment of captives ; but then war is war, and there were no tortures beyond the needful binding of the arms to prevent resistance. The figure of a king clubbing a group of captives is only an emblem of victory continued from primitive times.

MAYNARD, J. A.—*Were the Phoenicians a Semitic People?* This is a review of M. Autran's book, the conclusions of which and their discussion we may briefly note. The idea is that Egypt and Mesopotamia were not favourable to external energy, and are not likely to have greatly influenced the world ; the greatness of their works and their brilliant qualities seem, however, to show that for the native the climate was not enervating. The Phoenicians are compared to the Northmen for their activity, and are regarded as having gone south to Palestine. In the Phoenician area of colonisation there are no Semitic names in Sicily, and very few in the Aegean. The archaic words in Greek are neither Semitic nor Egyptian, but probably come from the older Mycenaean. The Greek gods are of Asianic origin, and a few Phoenician words in Greek authors are not Semitic. But how about Carthage, the great Phoenician colony, with entirely Semitic speech ? The primitive name of Karia was Phoinike, but this proves nothing as it may lead either way. According to M. Autran it was the Karians who were the fount of civilisation, and settled in Syria. The place names of Syria are claimed as of Aegean origin. Maynard's conclusion is that there was a large Aegean element in the Phoenicians, which might be only due to a small ruling caste like the Franks ruling the Gallo-Romans. Altogether there is a whole wilderness of theories : Puni from Punt, or from Karia ; the leaders in civilisation, yet without a single distinctive art and merely copying their neighbours ; autochthonous Semites, or intrusive Philistines from Crete ; everywhere, and yet leaving remains nowhere ; with a capital, Motya, without anything eastern and merely inferior Greek work ; with an age-long reputation and nothing to show for it. Let us hope that serious excavation in Phoenicia, with careful archaeological discrimination, will clear up some of this confusion.

NOTES AND NEWS.

Capt. Engelbach has been clearing the great obelisk in the Aswan quarry, and finds that it is 133 feet long, which is more than any obelisk that has survived. It was abandoned because of fissures, and there are various plans for dressing it outlined upon it. The official report will give many interesting details.

The French excavations at Edfu have produced a jar full of Coptic documents of the VIIIth century.

Mr. Winlock, for New York, has found at Thebes a batch of letters of the XIth dynasty, as well as the foundation deposits of the XIth dynasty temple at Deir el Bahri.

Mr. Fisher and Mr. Mackay have found a group of demotic contracts at Drah abul Negga. Altogether, with the large quantity of Greek papyri and the earliest Hebrew obtained by the British schools, this may well be called the year of papyri.

At Amarna a palace on the south of the plain at Hawata has been further traced out by the Egypt Exploration Society. There was a stone hall, gardens, with cowsheds and dog kennels; a lake with buildings about it, strewn with flower beds and tanks. Another clearing was done on the workmen's village, which had long, straight streets like Kahun; many small things were found, and it was occupied until Tutonkhamen. At Hagg Qandil remains of a temple were found under the village, and this region continued to be occupied down to the XXVIth dynasty. A glass factory was found in the town, and the house of the vizier Nekht proved to be well inscribed, and to show some fresh kinds of decoration.

The remains from Byblos (Jebail) are now in the Louvre. Prof. Sayce states that the vases of the IVth—VIth dynasties were under the floor of the later temple. With them was a small seated figure of early Sumerian work, like a figure on a Tello relief, belonging to the time of Urnina, which is about 3600 B.C. As this is according to the Egyptians about the Xth or XIth dynasty, it might agree with the burial of Old Kingdom objects. The earliest object is a cylinder seal, with Thinite hieroglyphs belonging to a king Khoam, apparently a Babylonian or Amorite, naming Ra and Hathor as lord and lady of Gebal.

The Louvre has also recently obtained, from Cappadocia, at Topola, near Nevshehr (the ancient Soanda), the largest Hittite inscription yet discovered, about 16 feet by 10 feet.

Prof. Newberry's very interesting paper in this number adds a fresh datum to the early history, which will doubtless receive full discussion. The presence of the sealings equally of Sekhem-ab and of Per-ab-sen in the tomb at Abydos, and the absence there of any of Per-ne-maot, has caused the first two names to be looked on as belonging to one king, of whom the name as ruling the Horus people was Per-ne-maot. If Khosekhem is the same person as Khosekhemui, it

is strange that there were no seals of officials of Khosekhem in the tomb of Khosekhemui. The problem of the 363 years will have to be studied. There is only a presumption that Mena might have started an epoch, but nothing to identify him with Hor-akhti. But there is a likely source for that name under Den, as *Semti*, the two groups of three hills, might readily be taken in later times to mean *akhti*, the two groups of the sun between two hills. This would closely accord with the dates given by the Egyptians ; Den began in 5383 B.C., so the 363rd year would be 5021 B.C., and this is the last year of Khosekhem who crushed the enemies, supposed to be the Set party.

A suggestion mentioned in *ANCIENT EGYPT*, 1920, p. 59, that a sphinx on the east bank faced that on the west, seemed worth examination. I therefore walked along the east side from Old Cairo to Ma'adi, searching for any rock line which might have been trimmed into a sphinx. There was only one ridge of rock along this bank, north of Basatin, projecting southward, and this was too wide to have ever been cut as a sphinx. A small settlement of late Roman and Arab times is on the east side of it. There is, then, no ground for the idea of a contra-sphinx.

W. M. F. P.



2. MODERN LOOM IN THE VILLAGE OF MAHARRAQAH, LISHT.

ANCIENT EGYPT.

TEXTS FROM THE HITTITE CAPITAL RELATING TO EGYPT.

THE Berlin Museum has recently published a number of fragmentary texts in cuneiform and the Babylonian language, which were discovered at Boghaz Keui (*Keilschrifturkunden aus Boghazkoi*, Part III, 1922; copied by Weidner). The most interesting is part of a letter (No. 34) describing the visit of Khismi-sarma, the son of the Hittite king, to Egypt in the time of Rameses II or his immediate successor. The beginning and end are lost. The following is a translation of what remains:—

- (1) “ To the royal treasury (literally, place of the king)
 - (2) two envoys in
 - (3) Zidwalla did not have. [They have sent ?]
 - (4) to me the envoys of the king, and behold I am obedient.
 - (5) I have given (the money) for the journey of the (Egyptian) envoys ; this I will pay back
 - (6) to the treasury of the king ; let the royal treasuries pay (it)
 - (7) for the king’s embassy. Now you say to me :
 - (8) ‘ Behold, when Khismi-sarma departed,
 - (9) he departed in the months appointed for departure,
 - (10) and since during the previous year he ”
- The next two lines are too mutilated for translation.
- (13) “ Nakhkha (Nekht) of the domain of [the god (?) Was-] mua-Ria-
 - (14) Satep-na-Ria (User-maot-ra, Setep-ne-ra) in the domain of Amâna (Amon), and his prefect
 - (15) Léya (Lui, Levi) of the domain of . . . [of] Ria-masesa = (Ra-messu)
 - (16) mâi-Amana in the domain of the god ; in all 3 officers ;
 - (17) and I have given (the money) for their journey to thee
 - (18) in the case of the envoys when sending the fine presents
 - (19) which they have taken to you. And they are with Khismi-sarma
 - (20) together with your envoys who have gone with him.
 - (21) And the royal envoys are protected by the commander of the cavalry
 - (22) Nakhkha of the domain of the horses, the officer of the king,
- Obv. 1. along with the Hittite ambassador Kulaziti[s]
2. and the Hittite ambassador Zidwalla[s] ;
 3. and they have allowed for their journey to you
 4. on mission from the Hittite country 14 days which Kulaziti[s]
 5. took from here to Egypt (or) 20 days

6. which Zidwalli[s] took from here
7. to Egypt as he was late. This is what
8. they said. (But) my envoys have taken
9. [so many days to] reach Egypt.
10. The king's ambassadors who were late
11. and . . . sa . . . za in the Hittite territory [and in Egyp]t
12. protects their road from the Hittite kingdom to assist
13. their journey to Egypt month
14. [and] year by year

15. He has given as follows for the journey of the son of the king of the Hittites, Khismi-sarma,
16. for the hire of all these ships
17. at the feet¹, and he has accomplished it according to command very
18. quickly and has manned numerous ships ; all the ships
19. for providing for their journey to Egypt [are ready]
20. to make [the voyage]

-

By way of supplement to this account of a Hittite embassy, I append a translation of an account of an embassy from Egypt to the Hittites given in the Hittite language by a Hittite king who is probably Mursilis II (*Keilschrifttexte aus Boghazkōi*, V, p. 41, 1921).

1. " Now when my father (Subbi-luliuma ?) was in the city of Carchemish
2. then Lupakki and Hadad-zalma
3. into the land of Amka (the plain of Antioch) he sent ; so they went ;
4. the land of Amka they devastated ; the spoil of oxen and sheep back to my father
5. they brought. Afterwards the Egyptians of the overthrow of Amka
6. heard : they were terrified.
7. Then their ruler, namely Bib-khuru-riyas (Neb-khepru-ra)
8. just at that moment died ; now the queen of Egypt was Dakhamun . . . ;
9. she sent an ambassador to my father :
10. she said thus to him : ' My husband is dead ;
11. I have no children ; your sons
12. are [said] to be grown up ; if to me
13. one of your sons you give, and if he will be my husband,
14. he will be a help ; send him accordingly
15. and thereafter I will make him my husband. I send bridal gifts ' (?)
16. After my father had heard this
17. he summoned certain Hittites

[The next two lines and a half are destroyed.]

20. [to] Egypt
21. a secretary [. . . . by name], he despatched
22. enjoining (him) : ' A true report do you bring back,
23. why she has written the letter to me (and) as to the son of their ruler
24. what is become of him ; so to me a true
25. report do you bring back.'

¹ This is the literal translation. What the idiom signifies is unknown to me.

26. When the secretary had returned from Egypt—
 27. it was after this that my father captured the city of Carchemish ;
 28. he had besieged it for 7 days
 29. and on the 8th day he delivered battle one day
 30. and then [he stormed ?] it on the 8th
 31. and [9th] days . . . and thereafter
 32. captured the city

 44. An ambassador of the city (*sic*) of Egypt (Mizri), Khanis,
 45. came to him from its ruler, and my father in return a secretary
 46. sent to the land of Egypt who should thus
 47. address him as head of the mission : ‘ The son of their lord
 48. where is he ? me
 49. she has deceived (?) ; my son to the kingship the general of the army
 50. has not promoted.’ To my father
 51. the queen of Egypt thereupon thus
 52. wrote back : ‘ What is this you say ?
 53. ‘ She has deceived (?) me.’ I, if
 54. I had a son and if I my
 55. [people] and my country
 56. to another country I would have written.
 57. But no one has had seed by me.
 58. And now you say this to me : ‘ There is my
 59. husband ’ ; but he is dead ;
 60. I have no son ; so I have taken a servant
 61. and to another country in this manner
 62. I have not written : to you, however, I have written ; your sons
 63. are said to be grown up ; so to me one
 64. of your sons give, and he as my husband
 65. in the land of Egypt shall be king.’
 66. So my father was on his knees,
 67. and then the lady soon fulfilled (her) words
 68. and selected one of the sons.”

The last line is written in Assyrian with the exception of one word—*ša mari kittan* (= Ass. *šapal*) *izbat*, literally “ under the sons she took,” which I suppose was a Hittite idiom signifying selection.

Bib-khuru-riyas must be Tut-onkh-amen Neb-kheperu-ra. But who was Da-kh-Amun . . . ? The latter part of the name is illegible: the queen of Tut-onkh-amen was Onkh-s-pa-aten, altered to Onkh-s-amen. A form Ta-onkh-s-amen might yield Da-kh-amen.

The Hittite ambassador Kulazitis is mentioned in another fragmentary letter (*Keilschrifturkunden*, III, No. 67), from which we learn that the writer of No. 34 was probably an Egyptian doctor, Pa-Ria-ma-khû [Pa-ra-am-äkhet] by name, who was resident in Asia Minor. Egyptian doctors were celebrated for their knowledge and skill, and were consequently in request in the civilised world of the ancient East. The fragment is as follows :—

- (1) “ from here to the land of Egypt
- (2) . . . you have sent, and according to what I have sent

- (3) . . . the presents which you have given to be taken
 - (4) [by] the hand of Kulaziti they have taken ; these presents
 - (5) which you have given to be taken by his hand
 - (6) you did not give your mind to (their) following after him.
-

- (7) Thus now I summon the doctor who has written.¹
-

- (8) Pa-Ria-ma-hkû has carried out his journey to prepare²
 - (9) herbs for Kurunta the king of Tarkhuntas,³ and he
 - (10) was in need of all kinds of medical plants until I sent (them) ;
 - (11) and when he will come to you and I recommend him
 - (12) to Kurunta the king of Tarkhuntas to prepare the herbs for him ;—
 - (13) and I summoned these two doctors who are with him ;
 - (14) and do you give (money) for their journey to Egypt ;—
 - (15) when the doctor Pa-Ria-ma-khû who has written shall reach him,
 - (16) day or night let them not detain [him]
-

Keilschrifturkunden, III, 30, No. 66 :—

1. "Thus *inšibya nib tawi* (the king of Upper and Lower Egypt, lord of the two lands), Was-mua-Ria. (User-maot-ra)
 2. Satep-na-Ria, son of the Sun-god, Ria-masesa-mai-Amana ;
 3. [Salutation ? of] the king of the land to the brother of the god Khâra whom Hadad loves.
-

4. [To] Pudu-Khebe the great queen, the queen of the Hittites, he says :
-

5. [Now] to the king there is peace ; to my houses there is peace ;
 6. [to the] queens there is peace ; to the royal children there is peace ;
 7. [to] my soldiers there is peace ; to my horses there is peace ;
 8. to [my] chariots there is peace ; and within all my lands
 9. may there be peace exceedingly !
-

10. To thee the great [queen], the queen of the Hittites, may there be peace !
 11. To thy house may there be peace ; to thy children may there be peace ;
 12. to thy men may there be peace ; and within all thy lands
 13. may there be peace exceedingly !
-

14. Thus now Ria-nakhta the royal ambassador
 15. along with the envoy[s?] [with] Biqasti have departed."
-

¹ Or "I, the doctor who has written, declare." The very faulty Assyrian in which the letter is written, makes either translation possible ; but see line (13), where the same verb is used.

² Literally "make."

³ Tarkhuntas or Tarkhundas was in the neighbourhood of the later Kataonia.

The first line gives us the pronunciation of the Egyptian royal title, as well as that of the names of Ramses II; it may be added that it does not favour the Berlin system of transliteration. *Was-Mua* corresponds to 𒌩𒀭. Biqasti or Biqasta is mentioned in another letter from Ramses II to the Hittite king (*Keilschrifturkunden*, III, No. 69), where we read: "Now I have ordered (literally given) Biqasta to speak all the words which you (fem. !) have told him with his mouth in the presence of the king; he has taken care (lit. given) that my sons should hear them all as the queen has enjoined. Behold! these words which Biqasta has reported, what is the offence which I have committed against my brother? And what is the offence which I have now committed against you (fem.)? But the daughter [of the king] has declared: you have committed it! I am safe and sound, and a brother of the king of the Hittites."

The use of the feminine in this fragment would indicate that this letter also was addressed to queen Pudu-khebe as well as to the Hittite king.

Keilschrifturkunden, III, No. 70:—

1. [Thus] Suta-khab-sadu (Set-heb-sed ?)
2. [the . . .] of the great king, the king of Egypt.

3. [To] Khattusili the great king

4. [the king] of the Hittites he says:

5. [To] you the great king, the king of the Hittites,

6. O my [father], may there be peace, and to

7. your [son]s may there [be peace], &c.

9. the king of Egypt

10. thy brother is well.

11. Now the great king, the king of the Hittites, my father,

12. has sent to me to enquire after

13. the health of his son, and I

14. am exceedingly pleased,

15. since my father has sent to me

16. to enquire after (his) health.

17. The Sun-god and Hadad enquire after the health

18. of the great king, the king of the Hittites, my father,

19. and bestow the good fortune

20. of health and the brotherhood of the great king,

21. the king of Egypt, with the great king,

22. the king of the Hittites, his brother, for ever and ever.

23. And they give length of

24. years to the great king, the king of Egypt,

25. as well as years to Khattusili,

26. the great king, the king of the Hittites, his brother.

27. And they (*i.e.* the kings) continue well in
 28. splendid health, and they are brothers
 29. in splendid brotherhood for ever and ever.

-
30. Now I have sent a present to my father
 31. as a peace-offering (= birth-day gift) to my father
 32. by the hand of Pa-rikh-nâwi [Pa-ari-khenu].

-
33. of the best gold, a lot of threads (?)
 34. a full-grown ox with horns of white stone
 35. a with horns of black stone
 36. 3 shekels of the best gold.

The remaining list of presents is not sufficiently preserved for translation. The mutilated condition of the earlier part of text makes the relationship of the writer, who bears an Egyptian name, difficult to determine.

A. H. SAYCE.

[The astonishing letter of Dakhamen raises the question of the end of the Akhenaten family of daughters. So far as the data now go, they are exactly in accord with my *Tell el-Amarna* of 1894, and they give the following dates (and ages) :—

	Born.	Married.	Died.
Akhenaten	1395	(at 16) 1379	(30) 1365
Tadukhipa Nefertyti . . .	about 1395	(16) 1379	
Nezem-mut, her sister	1385	(53) 1332	
1. Mert-aten, mar. Smenk-ka-ra . . .	1377	(12) 1365	
2. Makt-aten	1375	not before (10)	1365
3. Onkh-s-pa-aten (Dakhamen ?) . . .	1373	by (20) 1353	alive (29) 1344
4. Nefer-neferu-aten	1371	mar. son of Burnaburiash	
5. Nefer-neferu-ra	1369	disregarded in (25)	
6. Setep-ne-ra	1367	1344	(23)

Tadukhipa was still alive long after the death of Amenhetep III, as four successive letters (IX to XII) were written from Mitanni referring to her; and Nefertyti is associated with Amenhetep IV before abandoning Amen, so there is no reason to suppose that she is not the same as Tadukhipa. Nezem-mut, her sister, appears but little older than Mert-aten; she was married at about 53 to Heremheb to legalize his position. Mert-aten was wife of Smenkarkara, after whose death she vanishes. Makt-aten was buried in her father's tomb, before him. A daughter was married to the son of Burnaburiash of Babylonia, and the fourth is the eldest possible. Of the last two there is no trace. They would be 25 and 23 at the death of Tut-onkh-amen; probably married to some foreigner, who could not accede in Egypt.

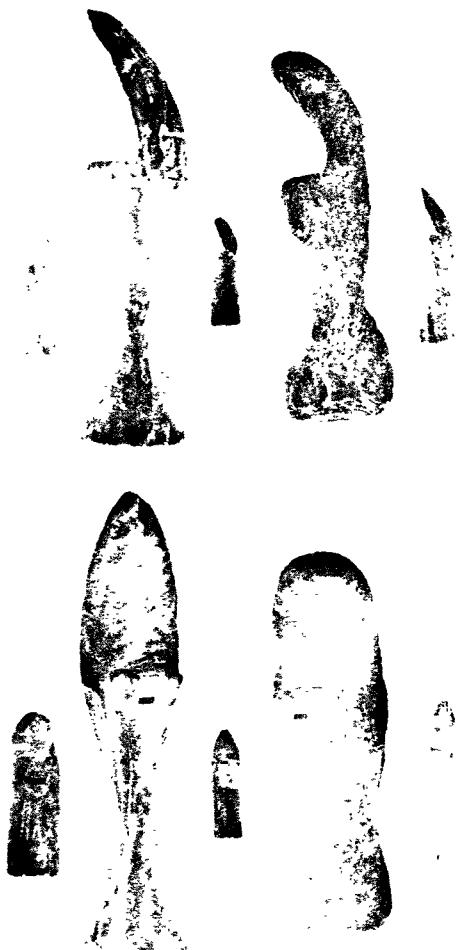
Then we find the widow of Tut-onkh-amen ("living image of Amen") named Onkh-s-amen, modified to Ta-onkh-ne-amen ("the life of Amen"), or Dakhamen, who was then 29, appealing to the Hittite king for a son of his to marry her and be king of Egypt. As her successors Ay and Ty were not of immediate royal descent, Ty being only nurse, this shows that Dakhamen was not unreasonable in wishing to imitate the earlier alliances of the Egyptian royalties with the Northern powers.—W. M. F. P.]

HEDDLE-JACKS OF MIDDLE KINGDOM LOOMS.

IN ANCIENT EGYPT, 1921, page 97, there is an article by H. Ling Roth and G. M. Crowfoot on the model of spinners and weavers found by the Metropolitan Museum Egyptian Expedition in the tomb of Mehenkwetre^a at Thebes. Toward the end of her remarks Mrs. Crowfoot notes that in the model "one very essential part of the Sudani loom is missing, the heddle-rod supports," and then makes the suggestion that "the curious wooden implements lying on either side of the (model) loom were used for this purpose," only to discard the idea because these objects seem to her "much more like tools used in the hand to adjust something." As no explanation along this line occurs to her, she finally republishes "a drawing of originals of similar implements from the University College collection in the hope of finding a solution."

It chances that independently of Mrs. Crowfoot I had arrived at the very solution which she discards, and believe that I have found ample confirmation of its correctness on the monuments and in the originals at University College (Fig. 1), and in still another original in the Cairo Museum shown to me by Mr. Quibell. Since the subject has been opened it seems worth while to clear up this one point in anticipation of any fuller discussion of these model looms.

The originals are wooden cylinders about a foot high, with a rounded, spoon-like, head above a notch in one side. In the model from the tomb of Mehenkwetre^a (Fig. 2 and the photographs in ANCIENT EGYPT, 1921, frontispiece and p. 99); in another model in Cairo found by Quibell at Sakkara, and in the paintings from the tombs of Bak^t and Khety at Beni Hasan (Fig. 2), these objects are to be seen lying on the floor on either side of the loom not far from the ends of the heddle-rod. In all these cases the heddle-rod is lowered to form the counter-shed, but to form the shed (for the return of the shuttle through the warp) some appliance must be provided for raising the heddle-rod and the alternate warp threads leashed to it. In the fixed-heddle loom, which is still used across North Africa, up the Nile Basin and out to Madagascar, the heddle-rod is either suspended

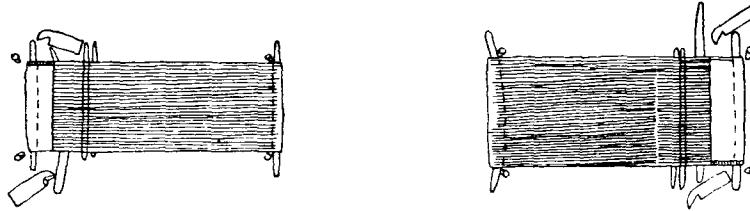


from an overhead frame, or is jacked up on supports such as those described by Mrs. Crowfoot from the Sudan, stones, baked clay pillars, Y-shaped sticks, or even a couple of pots. (See H. Ling Roth, *Royal Anthropological Society Journal*, 1917, Figs. 80 and 89A, and *Ancient Egyptian and Greek Looms, Bankfield Museum Notes*, 1913, Fig. 12). Since there was no overhead frame from which to suspend the heddle of the Middle Kingdom horizontal looms, some similar jacking support for the heddle-rod was absolutely necessary, and being an indispensable part of the contrivance, it must be shown in the models and the wall paintings. The short wooden cylinders lying at either end of the heddle-rods are the only objects invariably shown in the representations of these looms which could be put to this use, and I therefore feel that there should be no hesitation in calling them the heddle-rod jacks.

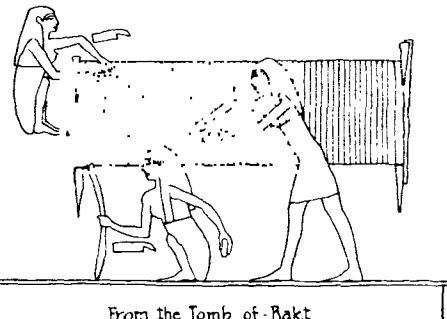
However, there is one essential difference between these jacks and the supports for the heddle-rods of the modern African looms already cited. The latter have heddle-rods permanently supported or fixed. Had the heddle-rods of the Middle Kingdom looms been fixed on the jacks, they would be so represented ; but, as a matter of fact, in most cases the rods are drawn or modelled as slacked down with the jacks lying prone beside them. This must be taken as a characteristic position in weaving, and the conclusion drawn that the Middle Kingdom loom had a movable heddle, which was not continuously jacked up.

To put these theories to a test, there seemed to me to be no more practical method than to make a working model of a loom, about 1 foot long (Fig. 2). As shown in the sketch, it is a perfectly practical machine. With the jacks removed from under the heddle-rod—as in the Mehenkwetre' model and in the Bak̄t and Khety pictures—the counter-shed is formed, and the shuttle is passed from right to left. The heddle-rod is then raised by hand, first at one end and then at the other, and the jacks inserted. Evidently it is this operation of raising the heddle which is shown in the Khnum-hotep picture, and the sadly damaged Daga picture apparently shows the heddle supported on the jacks. The shed is now formed, and the shuttle given the return shot from left to right. The jacks are then knocked out, the counter-shed again formed, and the shuttle again shot, and so on.

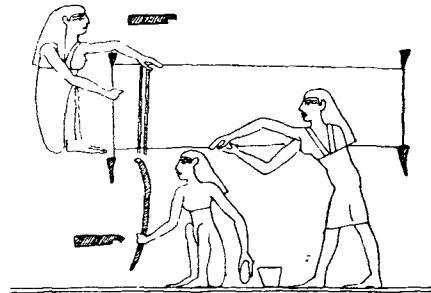
The heddle-jacks thus have to be set up and knocked down for every two shots of the shuttle—a process which seems extremely laborious on the face of it, but which life-long practice probably made a lighter task for a skilful pair of ancient weavers than we should find it. Moreover, the jacks themselves are contrived to simplify the process as much as possible. The spoon-shaped top is expressly contrived to slip under the end of the rod when it lies close to the floor ; the rod end then slides into the notch ; a quick jerk is given, and the jack sits upright, firmly held on its broad base by the tension of the warp threads. To lower the heddle-rod a smart blow on either jack brings down the whole affair. A pair of tall, slender jacks with narrow waists, in University College (Fig. 1) seems to be designed to be pulled or knocked out by hand ; but the stouter ones in that collection, and the one in Cairo, show deep battering on the sides and marked rounding on the bottom, from long use in looms where the tension of the warp was so great that heavy blows were necessary to tip the jacks over on the earthen floors. This indeed seems to have been the usual thing, for in all three Beni Hasan pictures, and in the Mehenkwetre' model, the assistant weaver (the one who wields the beater-in) holds a stone in her hand to knock her jack down.



The Two Looms of the Mehenkwere Model

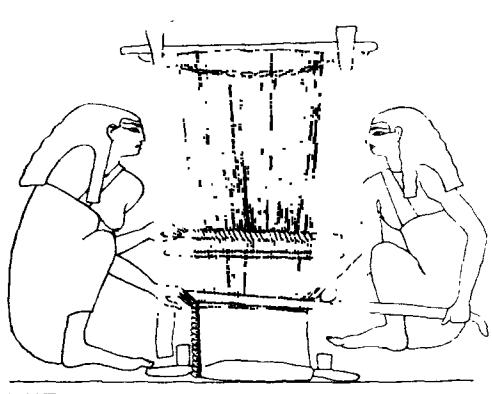


From the Tomb of Bakt

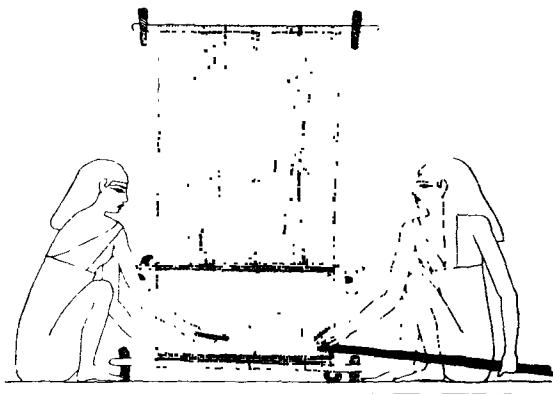


From the Tomb of Khety.

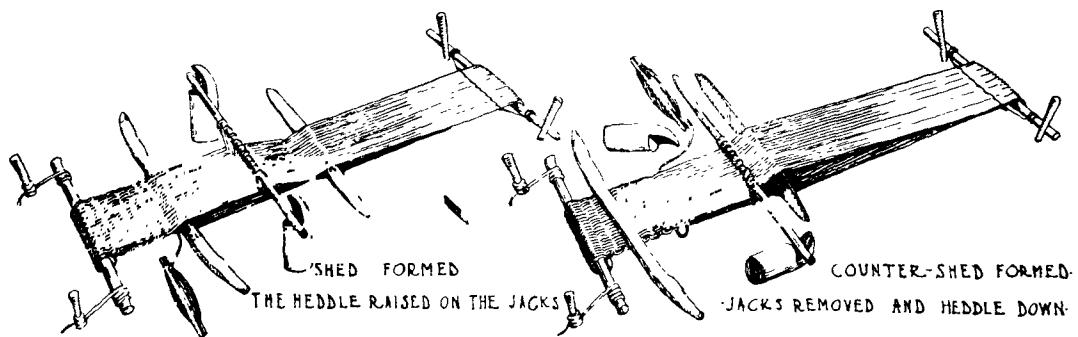
THE HEDDLE-JACKS DOWN DURING WEAVING.



From the Tomb of Khnum-hotep.
SETTING UP THE HEDDLE-JACKS.



From the Tomb of Daga
THE HEDDLE RAISED ON THE JACKS.



WORKING MODEL OF THE MIDDLE KINGDOM HORIZONTAL LOOM
IN ACTUAL USE.

FIG. 2. ANCIENT AND MODERN DRAWINGS OF LOOMS WITH HEDDLE-JACKS.

Whether or not there exists to-day a loom working on exactly this principle, I cannot say. However, the fixed-heddle loom of Libya and the Sudan—the zone of ancient Egypt's influence—appears to me to be the direct descendant of this Middle Kingdom loom. The jacks are now fixed, except when the fabric advances or is rolled up on the breast-beam, and the counter-shed is made by a complicated but rapid manipulation of shed-sticks, which is less laborious than handling the jacks. But the jacks remain, and the machine is that of the Middle Kingdom, except that it is operated in a slightly different way.

The available illustrations of Middle Kingdom looms are far from satisfactory. Only a very few tombs have preserved weaving scenes, and these are in bad preservation; and they have been copied with scanty knowledge of the working of looms, and have rarely been reproduced in facsimile. In default of really intelligible copies of the Khnum-hotep weavers, Ling Roth (*Ancient Egyptian and Greek Looms*) has reproduced for comparison the copies by Caillaud, Wilkinson, Rosellini, Lepsius, Newberry and an original drawing by N. de G. Davies. I have attempted to make a freehand composite sketch interpreting Davies' most recent copy from the older ones by Caillaud (*Recherches sur les Arts et Métiers*), Rosellini (*Mon. civ.*, pl. xli) and Champollion (*Mons.*, pl. ccclxxxi bis). The Daga weavers are published only by Davies (*Five Theban Tombs*, pl. xxxvii), and are here redrawn with restorations, none of which are important except the heddle-jacks, which I believe I can recognize in his copy. The weavers from the tomb of Bak^t are illustrated by Newberry (*Beni Hasan*, II, pl. iv) at a most inadequate scale—here enlarged freehand—while those from Khety are redrawn from Rosellini (pl. xli) and Champollion (pl. ccclxvi), with the jacks taken from Newberry (pl. xiii). Until fresh copies can be made from the monuments in the light of new technical knowledge, the student is warned to look upon these illustrations as makeshifts at the best. The diagrams of the Mehenkwetre looms are from an illustration prepared by Mr. L. F. Hall for a future publication of the models by the Metropolitan Museum, and those of the working model are from a loom I have made and worked myself.

H. E. WINLOCK.

LOOM WEIGHTS IN EGYPT.

MR. WINLOCK's discovery of a model weaving shop in the XIth dynasty tomb of Mehenkwetre¹ at Thebes has caused a great revival of interest in the subject of ancient Egyptian looms.² Those in the model are horizontal ones, and so far bear out the evidence of tomb paintings that the looms of the Middle Kingdom were horizontal, and those of the Empire vertical. In a country like Egypt, however, in which all artistic expression was bounded and restricted by convention, it is dangerous to generalise from the evidence of tomb models and paintings alone, and it is by no means safe to assume that vertical looms were unknown in the Middle Kingdom, or, as Mr. Ling Roth inclines to do,³ that in the Empire they replaced horizontal looms as a result of Asiatic influence. The simple form of loom represented in the model and in the tomb paintings could be used with equal facility in either position, and it would be more natural to suppose that under some circumstances a vertical adjustment would be found more practicable. That is as may be. In any case it is quite certain that the conventionalised tomb paintings are very far from giving us a complete picture of the knowledge of weaving that the artist must have had, for in none of them is there any suggestion of a weighted loom, and weighted looms the Egyptians certainly had.

Egyptologists have been strangely diffident about the loom weights that have been found in Egypt; almost apologetic, as though the weights were objects that had no right to be there, and were for that reason to be ignored or explained away.⁴ Why should we take up this attitude? We are all of us much too ready to assume that what we do not know cannot exist, and to affix a "foreign importation" label to anything that we do not much like the look of. As a matter of fact, warp weights are by no means uncommon in Egypt. I find them by the dozen in the ancient town of Lisht (Empire Period)—of mud, like the Kahun example, and also of stone—and there is no possible reason for doubt that they are Egyptian articles. Samples of both types are shown in Fig. 1.



I. MUD AND STONE LOOM WEIGHTS, LISHT.

¹ See *Metropolitan Museum Bulletin*, December, 1920, Part II; and the articles in *ANCIENT EGYPT*, 1921, IV, by Ling Roth and Crowfoot.

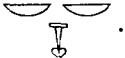
² "Studies in Primitive Looms," *R.A.I. Journal*, XLVIII, p. 141.

³ As an example we may quote the mud warp weight from Kahun in the Manchester University Museum, which Dr. Hall decided "was probably found in the ruins of houses where Aegean pottery was found," and hence was "probably a temporary warp weight of these people, and not an Egyptian article." (Ling Roth, "Ancient Egyptian and Greek Looms," p. 17.)

The Egyptians must then have used weighted looms. The question is, what form did these looms take? The most natural supposition would be that they belonged to the so-called "Greek" type, an upright loom with a single beam, the place of the second beam being taken by a series of hanging weights. There is another way, however, in which weights can be used, and one more easily adapted to the ordinary Egyptian two-beam looms. This is in Fig. 2 (frontispiece), which represents a loom in use to-day in the village of Maharraqa, close to the southern Lish pyramid. It is a pit treadle loom, in which the warp threads, instead of being attached to the warp beam, are carried under a roller, then diagonally upwards to another roller, over which they are bunched and kept taut by means of heavy stone weights. The same principle is adopted in Syrian looms, but with a difference, the bunched warp threads in this case being carried back and suspended over the head of the weaver (see diagram in Ling Roth's *Ancient Egyptian and Greek Looms*, p. 39).

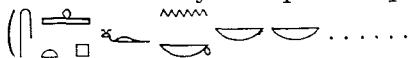
Now this is a much more practical form of loom than the upright "Greek" variety, and, as we said before, one much more likely to be adapted to the existing Egyptian type. The system of suspension weights would apply equally well to a simple form of loom, such as the ancient one must have been, and I think it more than likely that the weights which turn up in our excavations were so used. Indeed, it is quite possible that the modern loom is but a development from a form that has persisted in the district since ancient times. Such survivals are common enough, as every digger knows, and the excavation of the ancient town site of Lish has furnished us with a number of other very striking examples.

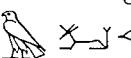
A. C. MACE.

ON THE MEANING OF .

It has been assumed that the sign  in the group , which occurs on several first dynasty objects (*R.T. II*, Pl. II, pp. 8–11), represents the *nebti* name of an early king. It seems more likely, however, that it is the archaic form of a queen's title, meaning consort (Sethe, *Beiträge I*, p. 32; Griffith in *R.T. II*, p. 48). Examples of this title are found in the titulary of queens in the Old Kingdom (Mariette, *Mastaba* 183, 225; De Rougé, *Inscriptions Hiéroglyphiques*, Pl. LXII and LXXVII); in the Middle Kingdom (De Rougé, *Inscriptions Hiéroglyphiques*, Pl. LXXV, *Tanis* II, Pl. XI, p. 171), and in the XVIIIth dynasty in that of Queen Aahmes (*Deir el-Bahri* II, Pl. XLVIII and XLIX).

In the Old Kingdom examples the word "consort" is written , whilst from the Middle Kingdom onwards the *w* is replaced by Smerf) and consort of Horus." In the titulary of Queen Nefert (*Tanis* II, Pl. XI, p. 17), the word "consort" is combined with the vulture and uraeus.

The writing of the word "consort" by the word sign only would be quite in keeping with ancient usage regarding the orthography of titles. The presence of the group  after the name Neit-hotep on an ivory lid which was found at Abydos (*R.T. II*, Pl. II, p. 11) is strong evidence in support of the reading consort, as Neit-hotep was a queen. The two basket signs would then read *Nebti*, "the two goddesses," or *Nebui*, "the two lords." The latter reading is corroborated by two parallel phrases in the Pyramid of Unas, lines 38 and 39 (  " he has satisfied for thee the two lords, the two goddesses are satisfied with thee"). If this be the correct reading, "the two lords" would mean Horus and Set, and the two baskets be a variant of  or of 

The reading "the two lords" gains further support from another Old Kingdom title of queens:  "She who sees Horus and Set" (De Rougé, *Monuments . . . aux six premières dynasties*, p. 45), which appears to go back to the 1st dynasty (*R.T. II*, Pl. XXVII, 96, 128, 129, Sethe in *Mahâsna*, p. 23, and *Beiträge I*, p. 29, note 8).

The antiquity and persistence of a queen's title would not be surprising, since N. Maat. Hap, an early dynasty queen, bore the title  "She who says anything, it is done for her" (*R.T. II*, Pl. XXIV, 210, *Mahâsna*, Pl. X, 7), and this epithet occurs also in a later form ( ) in the titulary of Queen Aahmes (*Deir el Bahri* II, Pl. XLIX), and of Queen Mut-em-Uya, the consort of Thothmes IV (B.M., Registration No. 43, Exhibition No. 380).

REVIEWS.



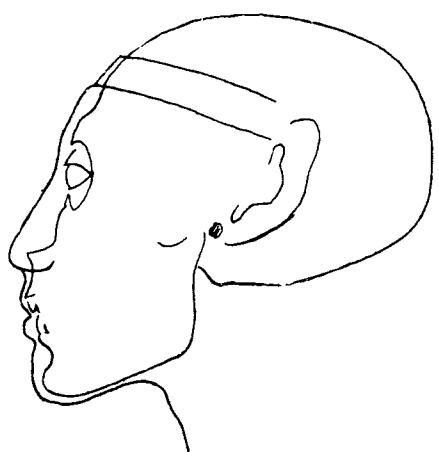
The Life and Times of Akhnaton. By ARTHUR WEIGALL. 1922. New and revised edition. 255 pp., 8vo. 12s. 6d. (Butterworth.)

Mr. Weigall has taken the place of an apostle of Atenism with much success. A preface describes the actual detail of work connected with the discovery of the king's burial. The conclusion is that the tomb in the valley of the kings was originally made for Queen Tyi ; that she was buried there ; that on the court abandoning Amarna, the body of Akhenaten was removed from his tomb in the desert there, and reburied in Tyi's tomb at Thebes. Later, when his memory was attacked by the priesthood, they removed Tyi from the tomb to bury her elsewhere, and left Akhenaten with his funeral furniture, including the alabaster canopic jars. Then in 1906 the tomb was discovered, with the sides of the great wooden funeral shrine of Tyi standing in the front of the chamber. Unhappily those who were responsible for managing the work (all now dead) ignored the means of preservation, and let this magnificent carving covered with gold foil go to pieces. The king's coffin, farther in, was better treated, and is now in good state in the Cairo Museum. The skull of the king, photographed in this volume, is set sloping backward ; it should be placed 10° more upright, for the true plane (of ear and base of eye) to be horizontal. This tilt gives a false idea of prognathism, and is a fault often seen in publishing skulls. When the true vertical outline is placed round this photograph, the drooping jaw of the sculptures is very marked. On comparing the skull with a normal form, the droop is seen to be due to the short distance between the ear and the plane of the face.

The work is divided into chapters dealing with the parentage of Akhenaten ; his birth and early years and the influences bearing on him ; his foundation of a new city ; his formulation of the religion ; the middle period of his reign ; the later period ; and the last years, ending with tracing the fall of his ideals. The translations give ground for much interpretation and application, with guesses and suppositions more or less likely, but within reach of a passable amount of imagination, needful to impress the self-satisfied British mind.

There are some matters which need more consideration. The ages of kings at their death are not quite so exactly fixed by the bones ; the family histories must also be taken into account, and probably Amenhetep III was 16 at his marriage, so that he could not be said to be "not yet in his 'teens," as on p. 27. In general, the ages of marriage are put needlessly early, unlike those in other periods. On p. 13 Ptah is assumed to be a dwarf god at Memphis, but he was of full height, and only a foreign form was dwarf, as a mixture with other deities.

Though mentioning the work done at Amarna in 1892, the author does not seem to know the publication of it in 1894, as he says that in 1910 "I was alone in my belief that Akhenaten was only thirty years of age at his death." That dating was fully stated as the basis of the chronology of his reign in 1894. Nor does he seem aware of the quantity of objects left by the successors of Akhenaten at Amarna, which contradict the shortening of the time between Akhenaten and Heremheb, for which there is no evidence in writing. Nor is there any hint of the fact that the artistic, ethical and religious revolution was fully described in 1894 from the archaeological evidence only. The last thirty years has not altered, and has scarcely added to, the account of the history : in only one small detail is there any change to make in the long account of that period stated before the subject came into fashion. Later writing can only amplify that, by quoting texts which were not available earlier. The idea that Nefertyti was a daughter of Ay seems precluded by any hint of that relation when he describes her in his own tomb ; nor can the supposed title of "royal father-in-law" be accepted. Besides a few misprints, there is a slip on p. 64 describing an ivory figure as from Diospolis ; it is from Ballas, as described where it is published in *Prehistoric Egypt*. The only heart-scarab formula might be quoted, as a break with the past, from the scarab at University College, and another heart scarab of Akhenaten with a silver plate is in that collection ; there is also the Maudslay scarab with a gold plate. The last addition to the subject only appears in the present number of this *Journal*, the attempt of Onkhsenamen to bring a Hittite in as king of Egypt after Tutonkhamen's death. The various matters named here are but subordinate to the fluent and attractive account of the most extraordinary growth of ideas that is known in any decade of the world's history.



[We append here the authorities that we have for the portraiture of Akhenaten. The outer line on the left is the profile of the plaster death-mask, slightly worn on the lower part of the nose. The inner line is traced from the outline of the skull, described by Mr. Weigall. The portrait on the right is the best sculpture that we have of the king, from his alabaster statuette in the Louvre. The identity of the three is remarkably exact ; with a stereoscope the outlines and sculpture can be combined. This result conclusively settles the sources of the skull and the death-mask.—F. P.]

Les Frises d'objets des Sarcophages du Moyen Empire. By GUSTAVE JEQUIER. 4to, 363 pp. 857 figs. 1921. (Mem. Inst. Français d'Arch. Orientale, Cairo.) 85 frs.

This is a great work of archaeological research, which will long be a standard of reference. The subject of the figures of objects represented on the interior of coffins, as a substitute for models, or for the actual objects, has long been a fascination, for the beauty of the drawings and the details. It was worthily recorded by M. Lacau some years ago in his Cairo Catalogue of the Middle Kingdom Sarcophagi, and he gave separate drawings of the objects classified. Now M. Jequier has far exceeded that, and has taken the subject as a text, to be discussed and illustrated by reference to the actual objects where such are known. This is, in fact, a *corpus* of the archaeology of daily life.

The material is classified under Costume, Jewellery, Toilet, Sticks and Sceptres, Weapons, Furniture, Food, Purification and Ritual. There is at the end a complete index of all the hieroglyphic words. Thus it is easy to find the way through the mass of detail. The minute distinctions between different signs and varieties are carefully observed and described. A few details may be here noted.

P. 32. The varieties of cloth are discussed, and twenty-four different names are quoted. Some are from colours, as green and white; others from places, as Hermonthis and Hierakonpolis.

P. 49. The single large bead on the neck should be noted as the name-bead which identified the wearer. (*Amulets*, No. 77.)

P. 50 and elsewhere the drop-shaped beads are never strung in line until the XVIIIth dynasty.

P. 81. The sistrum was, in the XIIth dynasty, already furnished with discs to rattle on a cross-bar, as at Beni Hasan.

P. 86. The *sma* sign appears distinctly human in the earliest representations, applied to the union of king and queen (*R.T.* II, ii, 8-10), but it was afterwards bowdlerised.

P. 120. It is difficult to accept Fig. 324 as a serviette. It seems to be clearly a dress, with fringes on the neck, arms and legs. (*Riggeh*, xxiii.)

P. 122. The identification of *suab* as soap is notable, also the cake of soap on the washstand of Debhen in the IVth dynasty (L. D. II, xxxvi). The word "that which cleans" seems obviously the origin of *sapo*; yet the difficulty is that the Romans attributed the invention of soap to the Gauls (Pliny, *N.H.*, xxviii, 51), and Aretas states that the Greeks obtained it from the Romans. Athenaeus (ix, 77) only refers to *smēma* for washing hands, and also to scented earth, used as an absorbent. It may be that the name *suab* referred to crude carbonate of soda used in Egypt for cleansing, and was transferred later to the true soap of soda and fat, which was of European origin.

P. 141. The seven sacred unguents are fully discussed. The various types of vases are figured, open-mouthed for stiff grease, and narrow-necked for oils. The meaning of the names is discussed at length, but not much can be fixed with certainty. The basis of several of the unguents was *men*, considered to be a fat which took up the scents, with which it was mixed, much as oil of roses is absorbed at present. The general use of this leads us to associate it with the unguent which was the commonest in Egypt, equally in the prehistoric age, the Ist and the XVIIIth dynasty, and which is believed to be palm oil brought from the West Coast. The *hati ash* or "essence of pine" suggests that there was some

mode of distillation to separate turpentine or cedar oil. The latter easily separates, and condenses at ordinary temperatures, so that some simple heating and chilling would separate it readily. The free use of cedar oil for embalming shows that it was easily obtained. The *hati ent Tehenu* strongly suggests olive oil, from the "olive land" (ANCIENT EGYPT, 1915, p. 97); this must have been an oil very familiar to the Egyptian, from Libya and Crete, and would be almost certain to be used. Various other unguents and perfumes are also described from the early lists. The various eye-paints are mentioned.

P. 159. The variety of staffs are discriminated, the straight for walking, those curved below, the thinner staff of dignity, the forked staff, the crook of princely rule, the *mokes* like a disc-headed mace with a blade rising out of it carried by kings, lastly the divine sceptre of the *uas* or *zam*.

P. 181. The *oba* or *kherp* sceptre is described, but without referring its use to the head of a clan (ANCIENT EGYPT, 1921, p. 86). The *nehet* was rather similar but rounded at the end. The flail was specially a divine emblem.

P. 203. The distinction of the disc and pear-shaped maces, as belonging to the first and second prehistoric age should have been noted. It must always be remembered that various objects remained in ceremonial use, long after they had disappeared from daily life. The disc mace, the harpoon, the dress below the breast with shoulder straps, were all fictitious survivals, like the Speaker's mace, the barrister's wig, or girls' college-gowns.

P. 296. The fans used by cooks, as at present in Egypt, to blow the charcoal fire, are represented; it might be added that the models in copper are found in tombs of the VIth dynasty (*Diospolis*, XXV). The list of nine kinds of grain, and as many of fruit, is given in connection with the granaries.

P. 329. The object used in writing the name of Neit is not explained; the proposal that it represents two bows in a case seems the most likely. The object termed a rammer is too short and wide for that purpose, and it evidently has something put over it, perhaps it is the wig stand. The object named perches (Fig. 848) seems to be a vertical rod, with two short pieces forming a triangle on one side, and a white disc halfway up (*Riggeh*, xxiii). Looking at the way the Egyptian put guide-lines on his work, with a triangle on one side to mark that the measure was to the opposite edge (L. D. II, 1e; *Medium*, viii), these seem to be survey posts for marking out ground, with the triangle to show that the opposite edge was the true line. The white discs might be for levelling marks. In such subjects there will long be fresh explanations to be considered, as many enigmas are before us. This fine classification of the objects of daily life will be an indispensable text book for this side of archaeology, useful for training students, and as a basis for fresh researches.

PERIODICALS.

Archives Suisses d'Anthropologie, 1919.

NAVILLE, E.—*Stèle funéraire du Musée de Bâle.* This is a round-topped stele, with a recess containing a mummiform figure of Să-setet, born of Săt-khati-ur. He appears to have been a grandson of Senusert I, whose figure is in a recess by the figure of Să-satet. See also the next stele.

Mélanges de la Société Auxiliaire du Musée, Genève, 1922.

NAVILLE, E.—*Une stèle funéraire Égyptienne.* This stele was dedicated by Să-setet in the nineteenth year of Senusert III. It bears figures of Ameny, born of Săt-ameny, and his mother, Săt-ameny, born of Săt-sebek. This was the father of Să-setet, whose mother was Săt-khati-ur ; also of twelve other members of the family. From the dates it seems most likely that he was a great-grandson of Senusert I, whom he claims as his ancestor. There is another stele of Să-setet dated in the first year of Amenemhet III (Louvre).

Annales du Service des Antiquités, XXI.

DARESSY, G.—*Sur une série de personnages mythologiques.* This is a series of hunters (?) of Mut, represented by partly animal figures. The word  rendered “piqueur,” seems difficult to define in its relation to the goddess ; it is read as *sheser*. The versions are on a lintel in Cairo Museum, on a slab from Sakha, and in one of the top chambers of Dendereh. The figures are (1) like Bes, holding two knives, or with the head of a crocodile. (2) Two bull-headed gods, joining hands. (3) Lion-headed god, standing on a serpent, or holding two knives. (4) Two lion-headed gods joining hands ; or jackal monkey-headed gods. (5) Long serpent on which are four gods ; first human-headed, second jackal-headed, third disc-head, fourth hare-headed ; or two bull-headed gods joining hands, and a god holding a serpent. (6) Serpent with two pairs of wings, on which are two hare-headed gods, or bull-headed gods. (7) A Set-headed god, grasping a long serpent, on which is a similar god. The smaller variations and details should be studied in the plate if the foregoing outline leads to further comparisons. The resemblance to the Gnostic material is evident.

DARESSY, G.—*Le Dieu Hérôn sur les Monnaies du nome Diospolite.* In the Fayum several monuments show figures of the Thracian god Heron, which are similar to a figure on horseback on coins of the great Diospolis, or Thebes. There was Cohors ii Thracum at Thebes, about 200 A.D., and Cohors i Thracum at Hammamat, about 100 A.D., which may easily have been at Thebes.

GAUTHIER, HENRI.—*A travers la Basse-Égypte.* At Athribis (Benha) pieces of a limestone tomb have been found of a general Mentu-em-taui, of the XIXth Dynasty. At Tell Moqdam a tomb was opened with a broken limestone coffin in one chamber, and an intact granite coffin in another. It contained remains entirely rotted by water, but with a good amount of jewellery. The main piece is a pectoral with Khnum seated on a lotus flower, and Hathor and Maot as supporters; a pair of bracelets, with applied figures of a scarab between winged uraei, several other pieces of gold work, and a heart scarab, of very short version, for the queen Ka-mo, supposed to be short for one of the Karomomo queens of the XXIIInd Dynasty.

Various reliefs of funeral offerers, very graceful imitations of the Old Kingdom in the Saite age, have been found. "All of these monuments are preserved in the museum of Cairo," except one at Alexandria. It may be added that there is another piece at University College. The present illustration is of a new slab from Tell el Ferain (Buto); beside this the others are three from Memphis, three from Heliopolis, two from Bubastis, one from Sais, one from Athribis. A Sphinx of grey-green stone from Sais has cartouches partly defaced, of Psamthek I or II.

A statuette in black granite of Uazet has been found at Buto, confirming the identification of that place. It was dedicated by Peda-Her, born of Teda-Asar-unnefer.

A sandstone stele found at El Barada, near Qaliub, has a Ptolemy offering fields to Horus Khenti-khatu, lord of Athribis.

LEFEBVRE, GUSTAVE.—*Textes du tombeau de Petosiris*, Part III. The first is a long text beginning with usual desires, and then bewailing the untimely death of an infant, mourned by parents and family.

IV.—The usual request to passers-by to recite formulae for the dead is amplified, and enters on an argument for such help:—"Read the inscriptions, celebrate the rites in favour of my name, pronounce my name in pouring abundant libations, give me food for my mouth, provision for my lips. This will not tire your mouth to repeat, these are not riches which will fall from your hands. As one shall do, so shall one be done by; it is a monument that is left behind one to say a good word. God himself shall requite one according to the way he behaves to my request; whoever does well to me, so shall it be done to him; he who praises my *ka*, shall have his *ka* praised; he who does evil to me, so shall it be done to him; because I am a devotee of God, who will grant that you shall be treated in the same way by those who shall come after you during all time to come. I have reached this tomb without having committed sin, without having incurred reproach from God."

ENGELBACH, R.—*Report of the Inspectorate of Upper Egypt*, 1920–21. At Karnak exchanges of land have been made, to expropriate householders. In the necropolis at Qurneh a map of all tombs and government property to scale 1/1000 is being made. More land exchanges are carried on here, to clear the tombs. In the Courts, punishments have been firmly given for not reporting the finding of antiquities, and for selling forgeries, and selling without a licence. The discoveries are:—

- Lower part of seated figure of Sebek-hetep IV.
 Scarab, *hypselogenia*, with *neferui kheper ka* in concentric circles.
 Stele of Khuy, made by his son *ari nekhen* Her-nekht, born of Ates-senb, and his son Her-hetep, and the lady Oshā-senb.
 Stele of Her-behudti-mes, son of Her-hetep, born of the priest Arer.
 Stele of Her-her-khutef, son of Rames, and his wife Tuf.
 Ushabti box of Pa-nef-em-dat-amen, and his wife Hent-neferu, adoring Horus-Ra seated (as Osiris) with the four genii on the lotus before him.
 Part of black granite statuette of Humoy, keeper of the house of the divine wife.
 Onkh-uas amulet of green glaze with names of Taharqa.
 Limestone stele of youthful Khonsu.
 Basalt base of statuette, formulae but no name.
 Bronze legs for furniture, and simpula for dipping wine.
 Limestone stele of Hat-ay.
 Coptic ostrakon, letter, piously asking for attention to a flax crop.

MUNIER, HENRI.—*Manuscrits Coptes de Cheikh Abadch.* These are various fragments of Psalms, Prophets and St. Mark ; Index of Sunday lessons ; fragment of Anaphora ; fragment of Matthew xxvii, 4–6, with variant.

Fasc. 2.

EDGAR, C. C.—*Selected Papyri from the Archives of Zenon.* This deals with the details of a debt running over fourteen years. It is complicated by repayments, stopped out of salary, with interest therefore continually changing, and the transfer of two female slaves. A matter of importance is that after a settlement the debt was considered to start *de novo*, and the interest would not amount to more than the capital, as Diodoros states. There are many details of the calendar, for which the text needs study.

ENGELBACH, R.—*Alphabetic Hymn in Coptic.* This is in four-line verses, each beginning with a successive letter of the alphabet, and the last line in each being the same, “ He who was incarnate in the Virgin.”

ENGELBACH, R.—*Fragment of the Gospel of St. Matthew in Coptic.* This is in Sahidic, from Matthew ix, 13, to x, 16.

ENGELBACH, R.—*Coptic Ostraka.* A letter, or memorandum, and twist patterns.

SCHIAPARELLI, E.—*La Missione Italiana a Ghebelein.* Three pages of various notes on the site, but no results of all the large cases of antiquities which were removed. “ Riserbandomi dare di questi scavi più ampia e particolareggiata relazione,” &c. ; but why not publish ? Let us hope that no more work will be tolerated till all the important things that have been removed to Turin are properly published.

DARESSY, G.—*La barque d'or du roi Kames.* The treasure of Aoh-hetep was found by natives, and only some months afterwards did Mariette obtain it. Hence there was no authority for the positions of the figures in the boats, except

the material indications. In the boat with three gold figures, the soldier with an axe has been misplaced on the socket of the mast ; he should be in front of the man in the bows.

DARESSY, G.—*Sur une empreinte de Sceau.* This is a sealing from Deir El Bahri mummies, which Maspero did not explain. It is a variant of a title of an official, *Setm ne ta hat* (ne seten Ra-user-maot) Setep-ne-ra (em per Amen), the sections in parentheses being omitted. Thus the seal reads “ Domestic of the house of Setep-ne-ra.”

DARESSY, G.—*Fragments Héracléopolitains.* Stele of the ninth year of Pef-nef-da-bast, giving 50 setet of land ; doubtless the same king who dedicated the gold statuette of Hershab there, named Ra-nefer-ka, Pef-da-bast, mes Bast. (*Ehnasya*, front, and p. 18.)

Upper part of a stele of the general Bak-ne-ptah. This general submitted Herakleopolis to the High Priest of Amen, Usarken, in the 39th year of Sheshenq III.

Upper part of a stele of Pa-da-bast, successor of Her-să-ast.

Statue of black granite, about the XXXth Dynasty, of a governor of the south, over all the prophets of Herakleopolis, Sam-taui-tafnekht, son of the similar Onkh-sam-taui. No reason is stated why this should not be the Sam-taui-taf-nekht, well known early in the XXVIth Dynasty.

Statuette of schist of Onkh-thek-r, son of Pep, born of the priestess of Mut, Sedarbu.

LEFEBVRE, GUSTAVE.—*Textes du tombeau de Petosiris.* A younger brother recites all that he has done for the tomb of Petosiris, speeches of Zed-tehuti-auf-onkh, and of Seshu, his son. Some unusual protestations occur : “ Good is the way of the man who obeys God ; happy is he whose heart strives to follow Him. I will tell you that which has happened to me, I will have you informed of the will of God, I will have you advance in the knowledge of His Spirit. If I have come to the eternal home, it is because I have done good upon earth, and my heart is fully on the ways of God, from my infancy to this day. All the night the Spirit of God is in my soul, and I rise in the morning to do that which He loves. I have done justice, I have detested wickedness. I have seen this (one) who lives, that in which He is pleased ; I have done the pure things which He loves ; I have not agreed with those who know not the Spirit of God, but I lean on those who act according to His will. I have not taken aught belonging to another, I have not done ill to anyone. Truly I have gained the gratitude of all my neighbours. All this have I done with the thought of reaching God after my death, and because I knew that the day would come of the masters of justice, when they would make the division in the Judgment. Happy is he who loves God, he shall come to his grave without sin.” It looks here as if some of the Jewish settlements (which had been in Egypt some centuries when this was written) had spread the knowledge of the Psalms, and influenced the tone of Egyptian religion.

LEFEBVRE, GUSTAVE.—*Deux Inscriptions Grecques du Fayoum.* A dedication from Theadelphia is for Ptolemy and Cleopatra and their children ; “ Phatres, son of Horus, dedicated the refectory and the altar of Heron the great god. Year 30. Pachons 8.” This date proves it to be of Euergetes II and Cleopatra III, date June 3, 140 B.C. The god Heron appears again here. From Karanis is a lament in 18 lines of a girl of 20 who died unmarried.

Fasc. 3.

BARAIZE, ÉMILE. *Rapport sur les travaux exécutés à la grande Pyramide.*—The flow of visitors to the pyramids during the war led to an official wish to render the interior of Khufu's pyramid an easier show place. Accordingly the fragments of broken casing were removed from the north face to clear the way to Al Mamun's forced hole, which runs horizontal to the start of the ascending passage. Steps have been provided to divide the course-heights so as to walk up to it easily. The passage has been enlarged where needful. To rise to the ascending passage steps are provided. A wooden gangway is placed up the ramp, past the entrance to the Queen's Chamber, which is guarded at the end of the gallery floor. A wooden gangway is placed all up the gallery with a handrail; steps up over the big granite step are provided. It was proposed to build up the old hollows in the entrance passage floor, into a tidy staircase; but this seems to be omitted, and both entrance and exit are to be by the forced hole. Next the interior is to have electric lighting. The old interest of scrambling in and out, alone, and without even a light sometimes, has vanished. *Tourisme* triumphs, and everything is smoothed down to the capacities of those who do not think it worth any trouble. Handrails, iron cramps and steps, and wooden flooring, are a contradiction to a pyramid.

BARAIZE, ÉMILE.—*Rapport sur l'enlèvement et le transport du Sarcophage de la reine Hatchepsitsu.* It will be remembered that the natives found a tomb halfway up a cliff, screened by a projecting rock (*ANCIENT EGYPT*, 1917, 130); and Mr. Carter cleared it, and disclosed the second sarcophagus of Hatshepsut. This has now been removed to the Cairo Museum, a difficult task, as it was 175 feet above the floor of the valley, from which there was also a further descent. The weight is over a ton, but cut so thin that it could not withstand shocks. Access for the work was by a ladder, 65 feet high, secured at the top. The sarcophagus was safely lowered this distance, and then moved by a light railway laid winding round the valley down to the floor. It was a difficult matter to remove it from such a position; how about the people who succeeded in placing it there? The two sarcophagi of the great queen now stand side by side in the Cairo Museum, one which she abandoned in this cliff tomb, the other which she placed in the royal valley—beautiful in colour, in the refinement of proportions, in the delicacy of low reliefs. The thought always recurs, in the Cairo Museum especially, is the world fit to assume responsibility for all these treasures of the past; to ensure that fanaticism, violence, or greed will not extinguish them; to guarantee them for some more thousands of years of existence? Or is all this exposure the last stage? Gold work is robbed from museums almost every year, and everything else runs some risk when exposed to the changes of an ever-shifting world—mostly ignorant, all selfish.

BARAIZE, ÉMILE.—*Rapport sur la découverte d'un tombeau de la XVIII^e dynastie.* In the same mountain as the previous tomb the natives had detected another cliff tomb. By successive ladders it was reached. It proved to have been entirely plundered anciently; a scrap of gold foil, fragments of an alabaster vase, and a little pottery were all that was found. There must be somewhere another tomb of this date, from which the natives obtained the great find of XVIIIth Dynasty jewellery; the only piece that has yet cleared the market is the massive gold statuette of Amen, which Lord Carnarvon exhibited at the recent

Exhibition in the Burlington Club. The rest is somewhere unknown ; if repression is too vigorous, the knowledge of it may die with the present owners, and the whole be lost. A fair policy of payment by the Government would save it, but legalism is too often against the interests of archaeology.

ENGELBACH, R.—*Notes of Inspection, April, 1921.* Work has been carried on—since completed—in clearing the quarry obelisk at Aswan.

From Edfu comes a scarab of Pepa (Shesha), with scroll borders.

A stele of a man who was a “royal son” of Dudumes, begotten by the “royal son,” Sebek-hetep. This title implied royal descent of some generations back, as in the “royal sons of Ramessu,” in the XXIIInd Dynasty.

Stele of Amenemhat under Shabaka, with his wife Khikhiau.

Coptic iron fork, decorated, with two very long prongs.

A quantity of ushabtis of Ramessu VII were found in the government store at Luqsor, of the usual very coarse work in alabaster of that age, though none of the king were yet recorded, and it is not known where these were discovered.

Remains of a small temple of Domitian were observed behind the *markaz* buildings at Aswan.

GAUTHIER, HENRI.—*A travers la Basse-Égypte.* At Heliopolis, 125 yards from the station, toward the obelisk, a lintel of a tomb was found, which led to opening a series of small tombs, all swamped at high Nile. The largest chamber was for a divine father of Heliopolis, *kher-heb*, Rames. The jambs and lintels are in Cairo Museum. Only some common blue and green glazed beads were found.

At Terenuthis (Kom Abu Billu, 35 miles north-west of Cairo), the two great mounds are being rapidly worked out by *sebakhin*. Five steles have been found and sent to Alexandria. One is figured here, with a woman half reclining and holding a cup ; a table with offerings, amphora and sheaf of corn, below ; name Thaesia of Bekhenthos, and her son Asklas (for Asklepios). Date probably about 200 A.D. Other late steles from there are at Tanta ; those give the names Hippolenaios, son of Ptolemy, Tatitouôs, Eudemonis, Antemidoros, Theodosios, Tlaktôta, Ammonios and Arphibichis.

A much damaged triad of Ramessu II and two goddesses was found at Benha ; it was left in place as not worth transport.

HAKIM ABU SEIF.—*Une petite trouvaille à Karnak de modèles de sculpture.* A group of sculptors’ trials were found by accident, on land which had been exchanged away to a native. It is said the best were quickly removed, but the guards came down on the remainder, seized them, and had the finders punished. This harshness is the sure way to make natives secrete all they can. The new law that all antiquities in private land belong to the State, will ensure their theft, destruction, or re-burial wherever possible. It is fatal to archaeology.

LEFEBVRE, GUSTAVE.—*Textes du tombeau de Petosiris.* In further addresses some phrases deserve notice. “Amenti is the dwelling of him who is without sin, happy is the man who reaches it. None can come there but he whose heart is true and does aright. There no distinction is between the poor and the rich, but only for him who is found without sin, when the balance and the weights are before the lord of eternity . . . to judge every man according to his deeds upon earth.”

Petosiris then recounts how he managed the property of Thoth, during seven years of foreign rule, when there was trouble in the south and confusion in the north, and the temple was dismantled. This seems to have been a part of the eleven years of Persian misrule, 342–331 B.C. He then describes his labour and devotion in restoring the state and property of the temple, and his founding a temple of Ra in the temple garden. He built the house of the wives of the god in the interior of the temple, because it was ruined, and they had to live in the temple. He built the house of Nehemouat, and that of Hathor, in fine limestone. He enclosed and protected the temple precincts. He found the temple of Heqt in ruin from time immemorial; the inundation swamped it. He called the scribe of the temple and gave him untold silver to restore it.

Zeitschrift für Agyptische Sprache, Vol. LVI, 1920.

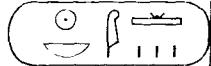
SPIEGELBERG, W.—*Ein Bruchstück des Bestattungsrituals der Apisstiere. Demot. Pap.*, Vienna, 27.—Brugsch recognized this papyrus as an Osiris ritual or Osiris mystery. Spiegelberg shows that it is a book of ritual of the Osirianised Apis, written in a mixture of demotic and hieratic: the beginning and end are lost. The provenance is unknown; by the writing it is undoubtedly from Lower Egypt; Spiegelberg suggests the Serapeum of Memphis. The texts of the *recto* and *verso* are by two different hands; both are Ptolemaic, about 250–100 B.C. The *recto* is easily legible; the *verso* is written in a flowing hand which is illegible in places, and which is often only decipherable in that it occasionally contains a similar text to the *recto*. The scribe was most familiar with demotic, though, like all scribes, he also knew hieratic, which was still used in late times for all religious purposes. The papyrus contains instructions to certain priestly officials who were concerned with the mummification of the Apis, especially the *ḥrī sṣt̄* and the four *ḥrīw hb*, who were priests of the cult of the dead. In this case, the *ḥrī sṣt̄* is manifestly the leader of the mummification, and Spiegelberg translates the term as Ritual Leader. Besides these are mentioned two “Little Friends” () and the *wr in*, the “Chief of Companions.” Though the text in its present form is Ptolemaic, it apparently includes passages from a more ancient ritual. That it is not the final canonical form is proved by comparison of the texts of the *recto* and *verso* of the papyrus, which describe the same rites in different ways. Spiegelberg describes his translations as merely preliminary, intended to prepare the way for further work. The *recto* as it stands begins with the instruction that the Apis mummy is to be laid on a bed of sand, whilst a lament is to be made by the Ritual Leader and the four lector priests. The body is to be fastened to a board with metal rings and laid on a stand. Sarcophagus, shrines and boats are to be brought, and draped like the mummy. Then follows an exact description of the bandages for the head and extremities, which are to be prepared by the Ritual Leader and lector priests. Next comes a description of the bandaging and anointing of the mummy. A special priest is to direct the preparation of the skull, which is described in every detail, including the wrapping of the horns: he is to stuff the cranium (?); to remove four teeth; to place wax, myrrh and incense in the head; then to anoint, stuff, and bandage the mouth and face, then the eyes, nose and ears; then to bandage the whole head. The bandaging of the head and

breast follows; the legs are to be stretched out as far as possible in order not to be bent. A lector is to stand in front of that part of the body which Spiegelberg supposes to be the abdominal cavity, to wash, stuff and bandage it. The embalmed mummy is then to be set up, after which follow further detailed instructions for bandaging. At the final bandaging the "fathers" and the priests (*hmw ntr*) raise a lament. The laying of the Apis mummy in the coffin and on the bier, is to take place near the Apis stable, and a *zed* pillar is to be fastened behind and in front of the sarcophagus. Then the corpse is to traverse the "Lake of the Kings," which is to be crossed from the west. Isis and Nephthys, Upuaut of Upper Egypt, Upuaut of Lower Egypt, Ra, Horus, Thoth and the Bed of Ptah are in front of the god, who faces south. During the crossing, nine papyrus rolls (which are named by their titles) are to be read aloud in the boat, including the "Glorification of the Drowned Osiris." Then follows the conveyance of the god to the place of embalming and the performance of the ceremony of Opening the Mouth. The *recto* as it stands ends with the enumeration by the priests of all the things they need in the embalming room, and of their purpose; these include straw, byssus-cloth, jugs, vessels, mats, boats, sacred eyes, &c. "Horus metal" (*i.e.*, copper, perhaps copper instruments used in embalming) is frequently mentioned. The *verso* of the papyrus also contains directions for embalming part of the Apis; the exact part is uncertain, as the term rendered above as "abdominal cavity" may mean "back of the head."

MÖLLER, GEORG.—*Zur Datierung literarischer Handschriften aus der ersten Hälfte des Neuen Reichs*.—By comparison with the dated papyri of the XVIIIth and early XIXth Dynasties, of which a short survey is given, Möller proceeds to determine the age of the following papyri:—(1) Cairo Hymn to Amen (Papyrus de Boulaq, ed. Mariette, No. 17; (2) London Medical Papyrus, Brit. Mus., No. 10059; (3) the so-called Astarte Papyrus of the Amherst Collection; (4) Harris Papyrus 500 *recto* (love poems); (5) Harris Papyrus 500 *verso* (The Conquest of Joppa and the Tale of the Enchanted Prince). Four of the dated MSS. used by Erman in the palæographical section of his edition of the Western Papyrus, namely, the "Papyrus de Turin," Papyrus Boulaq 10, London Ostracon 5625 and London Ostrakon 5624, cannot be used for the palæography of the XVIIIth Dynasty, as they belong to Dynasties XX and XXI. The author protests against the error of dating a hieratic papyrus by general effect, and insists on the necessity for making a complete list of the signs and comparing them with the available dated material. He gives a selection of 31 signs, in three tables, from the five papyri in question, with references to his "Palaographie," and summarizes the means of recognizing papyri of the XVIIIth Dynasty and of the period up to the beginning of the reign of Rameses II.

Möller dates the Cairo Hymn to Amen to the middle of the XVIIIth Dynasty on the basis of the similarity of certain forms in the handwriting with those of the time of Amenhetep II (such as the form taken by  to avoid protrusion beyond the end of the line), and also of later forms, such as those of  and . Though the forms of , , ,  and  are those of the Ebers papyrus, this apparent discrepancy is explained by the assumption that the scribe was an old man who retained certain forms learnt in his youth which were antiquated when he wrote the text.

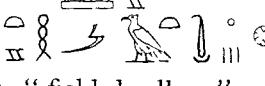
The London Medical Papyrus shows a later form of  than do papyri of the period of Amenhetep III and Amenhetep IV, but it so closely agrees with them in other details that it must be placed as near them as possible. In it are thrice mentioned recipes which had proved efficacious in the time of Neb-Maat-Ra.

The entry occurs twice as  and once as . It is clear that Amenhetep III could not have been referred to thus in his own time, nor in that of his immediate successors, and Moller suggests that the disrespectful form of the second reference shows that the MSS. must have been written at a time when this king's race had waned, probably in the reign of Tut-anch-amen. On palaeographical grounds, it is impossible to give the papyrus a later date. Similarly, the Astarte papyrus is near the London Medical papyrus in date, and cannot be much more recent. It probably belongs to the time of Horemheb.

The Harris papyrus 500 has certain signs in common with the handwritings of the time of Menephthah, Sapthah and Seti II, and others in common with those of the end of the XVIIIth Dynasty and the time of Seti I. The order of the signs  for *s*, as in the *verso* of the Harris papyrus, is characteristic of these papyri of the first half of the N.K. That this papyrus comes palaeographically between the Rollin papyrus of the time of Seti I and certain MSS. of the time of Menephthah and his successors is proved by the form of some of the signs, the actual form of writing being older than those of the dated MSS. of the second half of the reign of Rameses II. Möller would, therefore, place the older texts of the *recto* of the Harris papyrus 500 (love songs) at the end of the reign of Seti I or the beginning of the reign of Rameses II, and the texts of the *verso* (The Tale of the Conquest of Joppa and the Story of the Enchanted Prince) in the first half of the reign of the latter king.

Amongst the wrongly dated papyri he includes the Millingen papyrus (Griffith, *Zeitschrift*, Vol. 34, pp. 36 and 37), which is undoubtedly contemporary with the Cairo Hymn.

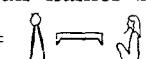
SETHE, K.—*Die aegyptische Bezeichnungen für die Oasen und ihre Bewohner.*—Sethe proposes a new reading *wȝ.t* for the word "oasis," which from the N.K. onwards is written  (with variants) and sometimes with the first consonant *w*,   , etc. The reading *wȝ.t* for this word-sign would give a uniform word as a term for "oasis" throughout Egyptian history, the O.K. name for the Great Oasis being   , and the Coptic word for "oasis" **oȝas**. From the way in which the word *wȝ.t* is used in N.K. texts, it seems likely that it was a general term for all the Oases of the Libyan desert and did not designate individual Oases.

The word *wȝ.t*, which was the general term for oasis from the O.K. onwards, had a forerunner in the term , "field," which survived in the name for the Wad; Natrum,  "salt field," and in the name of its inhabitants , "field-dwellers."

SPIEGELBERG, W.—*Neue Schenkungstelen über Landstiften an Tempel*.—Five stèles are described and figured which record the endowment of temples with land by private individuals. (1) A limestone stele (Strasbourg Institute of Egyptology, No. 1378) depicts Rameses I making an offering to Amen Ra of Pa-Bekhen. According to Brugsch, there was a series of places of this name (*p:blyn*), all of which were in the Delta. The inscription of six lines relates to an endowment of 50 arura of land to the temple by the commander of the fort; 21 arura seem to have been presented at his own charge, and the remainder at the charge of others, most of whose names have disappeared. (2) A limestone stele (Strasbourg Institute of Egyptology, No. 1588) records the dedication of five arura of land to Thoth by the scribe of a troop of Libyan mercenaries. The name and title of the benefactor (who is figured larger than the god) and the style of the inscription, which is mainly hieratic, point to the XXIIInd dynasty. (3) The drawing of the third stele is based on a hand-copy made from three much-weathered fragments of a limestone stele which Spiegelberg saw in Cairo in 1905. Behind the goddess Sekhmet stands a youthful god with the Libyan name of *HwK³*. Approaching the two divinities is a man in a long tunic holding the  sign, which means offerings of land, and accompanied by two smaller figures. The hieratic text (dated the eighth year of Shashanq) is much damaged, nevertheless Spiegelberg thinks he can detect the word *ȝyt* in the 3rd line. (4) A limestone stele, the squeeze of which was taken in Cairo in 1903, records a gift of land on the west of Sais to a temple, in the 23rd year of Psamtek I. Only the southern and eastern limits of the land are given. (5) A stele in the Cairo Museum (Recueil XVIII, 1896, p. 51) shows Neith with the *w:s* sceptre instead of the customary papyrus sceptre. In front of her is a male figure, possibly the king as the official donor, and behind her is a dwarf. Below is an incorrect inscription, mostly in hieratic, recording the gift of arable land, presumably to a temple of Neith, by a man of the Libyan name of *Iw:lh:n³*, “the dwarf of Neith.”

ERMAN, ADOLF.—*Zusammenziehung zweier Worte in der Aussprache*.—The frequent occurrence of forms such as  for *dssn* points to the improbability of such being caligraphical errors, and suggests rather the disappearance of one or two similar consonants in consequence of a slurring of two syllables in speech. Erman extends this explanation to another error in writing, which occurs in old texts and in those of the late N.K. This error consists in omitting one consonant in cases in which the last syllable of a word ends with the same consonant as the initial consonant of the next word. This explanation presupposes that the two words were run together in ordinary speech, and that there was no vowel sound after the last consonant of the first word; for instance,  for  proves that the demonstrative was tacked on to the substantive, and that the feminine ending, even in old times, was something like *-at* and not *-atu*. Similarly *mt* for *m mdt* “with ointment” shows that the preposition was joined to the substantive and was without a vowel ending. The objection that the scribe omitted the second consonant by mistake, thinking that he had already written it, disappears in the case of words with the same sound, but a different sign, such as the omission of *m* before 

MOLLER, GEORG.—*Das Amtsabzeichen des Oberrichters in der Spätzeit.*—Aelian (*Varia Historia*, XIV, 34) recounts that “from ancient times the judges in Egypt were priests. The oldest was their Chief. . . . Round his neck he wore an ornament of sapphire (= lapis lazuli); this decoration was called ‘Truth.’” Diodorus states that this was put on before hearing cases, and was turned toward the successful party as a sign of the verdict. The picture of the goddess of Truth hanging from the neck of a Chief Justice is met with occasionally in inscriptions of the time of Ptolemy III Euergetes; moreover, some statues of Chief Justices have been preserved showing the sign of office. The oldest known example (of the time of Necho) is in the Louvre; there are two in Berlin of the time of Nectanebo and Ptolemy V Epiphanes respectively. Figures of the goddess of Truth, like those represented in the statues, are also in existence; the Berlin Museum has three specimens, all made of lapis lazuli, and all with a loop at the back. A passage in the Gnomon of the Idios Logos, which Möller restores and renders as: “only the President (of the Court of Justice) is allowed to wear the sign of Justice,” shows that this symbol was in use at least until the middle of the second century A.D.

RANKE, H.—*Keilschriftliches.*—The author supplements his work on cuneiform renderings of Egyptian names by suggesting that: (1) *Dûdu* (*Duddu*) = , (2) *Anħara* = , (3) *Manahpirja* (variant *Manahpija*) = .

(1) On the assumption that *Tutw* is a Semitic name, there is no objection on phonetic grounds to the identification of *Dûdu*, the high Egyptian official (whose name occurs so frequently in the Tell el Amarna letters) with the high official of Amenhetep IV, called *Tutw*, who was buried at Tell el Amarna. His conclusion is confirmed by details in the letters and in the tomb inscriptions. *Dûdu* “sat before the king”; Aziru promises him anything he desires if he will only intercede for him against the enemies who slander him at Court; Aziru “fears the king and *Dûdu*. *Tutw* states that he “communicated the requests of the foreign ambassadors in the Palace, in that I was daily in the (house of the king ?), and I went out to them as the king’s envoy, equipped with all his Majesty’s commands.”

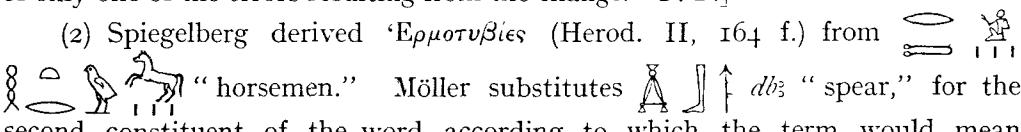
(2) In the cuneiform titulary of Rameses II at Bogaskeui, the king is described as the god, the ruler of Heliopolis, the brother of *Anħa.a.ra* . . . For his former translation of “brother of the god Horus,” Ranke now substitutes “brother of *Anħara*, reading *an* as a syllabic sign instead of as the determinative for god. This reading would correspond very well phonetically with the N.K. vocalization of *'In Hr*, the only god who is ever termed “brother of the king” in hieroglyphic inscriptions (cf. Mariette, Abydos I, 6, 30, where the same king mentions his brother *'In Hr*).

(3) The variants *Manahpirja* and *Manahpija* each occur once in the Tell el Amarna letters as the name of an Egyptian king. The recipient of the letter in which King *Manahpija* is called “the father of his father” is generally taken to be Akhenaten; consequently Thothmes IV should be *Manahpija*. Phonetically, this is impossible, as the *p* of *ḥprw* becomes an aleph in cuneiform. There remains only Thothmes III, but *Ra* in Middle Babylonian times was rendered as *riya*. Failing the supposition that the scribe in question omitted the sign *ri* by mistake

in two separate places, there remains only the assumption that the form is a rendering of an abbreviation of the name Men.Kheper.Ra, namely , after the pattern of 'Imniï for 'Imn-m-hst (Zeitschrift. 42, 144). The occurrence of such an abbreviation in these two places only is explained by the fact that the passages in question are in a letter, and that the name does not form part of a formal address or titulary. On phonetic grounds this explanation is satisfactory, but the actual difficulty of regarding Thothmes III as "the father of his father" can only be overcome by assuming that the expression is used in the sense of "ancestor." This is a somewhat forced explanation, as the same expression used in the same sentence in connection with the writer himself must surely refer to his own grandfather.

MÖLLER, GEORG.—*Zu Herodoto aegyptischen Geschichten.*—Herodotus (II, 129 ff.) relates of Mycerinos that he built the third Pyramid; that he was especially concerned with the administration of justice; that he lived at Sais, or at least built there; that he reigned not long before the Ethiopian domination; and that he ruled for six years only.

[All this is explained by the interchange of two rolls, the restoration of which puts the history in perfect order. It is useless to find an elaborate explanation of only one of the errors resulting from the change.—F. P.]

(2) Spiegelberg derived 'Ερμοτυβίες (Herod. II, 164 f.) from  "horsemen." Möller substitutes  "spear," for the second constituent of the word, according to which the term would mean spearmen, not cavalry.

(3) Μαρεψ (Herod. II, 79). A grave inscription (Zeitschrift, LV, p. 56) contains mention of a herdsman's lament on a reed flute for the god of vegetation. In a passage from Nymphis it is seen that the Manéros is a song of the country folk to Osiris, the god of vegetation. In the hieroglyphic text, the man who starts the lament is called , **ΜΑΝΕΡΩΩΤ**, which would become in Greek Μαρεψ; the *r* would then be introduced for euphony. In Μαρεψ Möller therefore recognizes the song of the cowherd, which was sung for Osiris, and which was accordingly also sung at burials, since the late Egyptians regarded all their dead as embodiments of Osiris.

SCHUBART, W.—*Rom und die Aegypter nach dem Gnomon des Idios Logos.*—The Idios Logos was a special office for dealing with irregular sources of revenue, such as fines and seizures. That the Romans attached great importance to it is proved by their placing a Roman noble at the head, who was of the same social rank as the Viceroy. He was frequently called simply the Idios Logos. The regulations for the Idios Logos were codified in a Gnomon. A new papyrus dating from about A.D. 150, of which the text only was recently published by Schubart, provides us for the first time with about 120 extracts from these Regulations. When Egypt became a Roman province, Augustus drew up a new Gnomon, which appeared as a Decree; the introductory paragraph of the papyrus shows that the Decree was subsequently added to by other Emperors and functionaries. The papyrus is incomplete and scrappy, being obviously a compilation only, and in it imperial regulations are mixed with purely local ones; nevertheless, it throws much light on the Roman administration of Egypt. The sections

dealing with inter-marriage, and the inheritance rights of the offspring of mixed marriages, reveal the exclusion of the Egyptian from Roman citizenship ; whilst those relating to religious matters have added to our knowledge on certain points. In general, the children of a mixed marriage shared the nationality of the inferior partner (Egyptian) ; from the mitigating clauses relating to ignorance of status, it is clear that members of different grades of citizenship were indistinguishable in appearance and speech, so that differences which were originally national had become only political in course of time. Egyptian wives of discharged soldiers were not allowed to call themselves Roman for business purposes. If an Egyptian became a legionary unnoticed, he resumed his Egyptian status on discharge ; the same rule applied to naval service except in the case of an Egyptian who had served in the Misenum fleet. Evidently the Egyptian marriage customs had spread, as one clause forbids Romans to marry their sisters.

In spite of lack of clearness and completeness, the paragraphs relating to the priesthood show that the State wished to protect religion ; a clause, however, which empowers the state to appropriate "bequests for sacrifices to the dead if the persons to receive these bequests were no longer forthcoming," was probably precautionary. Young bulls were not to be sacrificed unless previously sealed by the priest. Priests were not allowed to have any calling other than the service of the gods, nor might they wear woollen clothing, nor have long hair. Certain priestly offices of high rank which were hereditary were to be reserved for the family, whilst those which might be sold were not to be sold at auction (see the sale of next presentations in England) ; in every sanctuary with a naos, there was to be a "prophet," who was to receive one-fifth of the revenues. The office of stolist was obtainable by purchase ; stolists could take the place of "prophets." Only the President (presumably of the ecclesiastical courts) might wear the symbol of Justice (see *ante*). Pastophores (the highest class of the lower grades of priests) were not allowed to call themselves priests, but they might seek lay posts. In Greek temples, the laity was allowed to take part in processions. "Prophets" were not allowed to partake of sacrificial meats, but this prohibition did not extend to the pastophores. Those who failed to send clothing for the apotheosis of the Apis or Theoris were fined. Those who buried the holy animals were not permitted to be "prophets," nor to carry a naos in the processions, nor to feed the holy animals.

STEINDORFF, W.—*Eine Statue der Frühzeit.*—The provenance of this statuette is probably the small cemetery at Abusir excavated by the Ernst von Sieglin expedition in 1909. It is now in Berlin. This small seated figure is carved in yellowish slaty limestone, and measures 42 cm. in height and 18 cm. across the shoulders. The condition is not good ; the right hand and the lower part of the body down to the feet are missing, also the eyes, which were inlaid, and the left side is badly damaged. The man is seated on a *hند* stool, the four legs of which are joined by arched stays. The head is almost neckless ; the left hand lies closed on the chest. A long cloak passes from the left shoulder under the right arm, leaving the right shoulder bare. The skin and the cheek bones are prominent ; the eyebrows are modelled ; the face is beardless, with a small moustache ; the hair is parted in the middle and just covers the ears. The strands of hair are roughly chiselled in vertical lines ; the curly ends are indicated by horizontal strokes. The fingers and toes are but slightly indicated ; the body is not finely modelled. The style and treatment link this statue with other

examples of archaic seated figures (London, Paris, Leyden, Berlin, Naples, and Cairo); Steindorff considers that it is the oldest of the series, and suggests the beginning of the IIInd dynasty. It is the largest early example of a portrait figure with inlaid eyes. Unfortunately, there is no inscription.

MISCELLANEOUS.

1. WIESMANN, H.—In *A.Z.*, LIII, Wiesmann discussed the word **neat**; he now points out that **n** is the definite article, and that the word is really **eat**.

2. WIESMANN, H.—Rahlfs (*A.Z.*, XLIII) showed that the negative adverb **unop** is an emphatic imperative; the absolute form, of which **unp** is the construct form; in late Egyptian  , **unop** appears to take after it the preposition **e-** with the infinitive.

3. WIESMANN, H.—The derivation of **stoore** was given by Spiegelberg (*Rec.*, XXIV) as from *hr dw³(.w)*, but later (*A.Z.*, LI) he suggested *ls³-dw³(.w)*. Wiesmann considers the earlier one to be preferable.

4. WIESMANN, H.—According to Peyron and Stern the word **soeite** *Garment*, is masculine, in distinction from **soeite** *Hyaena*, which is feminine. Wiesmann now shows that it may be of either gender. He points out that the usually accepted derivation from    is doubtful, and suggests that it was originally a feminine word, and to differentiate it from the feminine **soeite** *Hyaena*, the gender was changed. Such changes of gender in Egyptian words and their Coptic derivatives are known.

5. MÖLLER, G.—A parallel case to that of Akhenaten is found in a later ruler of Egypt, also a religious reformer, namely *El Hâkim ibn 'Azîz* (A.D. 996–1021), who was under twelve years of age when his reign began. Though Möller does not wish to change the rendering of the name of  , which he states has become established in Germany as Echnaton, he suggests that it was probably pronounced '*Oħlatōn*'.

6. MÖLLER, G.—A small carved ivory reproduced from the second volume of Macalister's *Gezer* (p. 331, fig. 456) is not a pectoral but a portable sundial. Hitherto, sundials of this kind have not been known earlier than Ptolemaic times. Möller challenges Macalister's statement of a filling of green enamel, as real enamel was not known until later, and inlaid ivory is not common.

7. SPIEGELBERG, W.—The inscription on a damaged obelisk in the Borgia Museum at Velletri records its erection by a man with three names. Champollion correctly deciphered the last two as *Sextius Africanus*, without identifying the first name. Spiegelberg proves that this name is *Titus*. It is impossible to identify the *Titus Sextius Africanus* who erected the obelisk; for during the first century B.C. and the first century A.D. there were several members of the same family who bore these three names.

NOTES AND NEWS.

ALL the world has been stirred by the great news of the discovery of a royal tomb by Mr. Carter, working for Lord Carnarvon ; a noble result after years of discouraging clearances which only showed blank rock. Here the archaeological facts may be recorded, so far as yet described. On November 5th, Mr. Carter found a step in the rock under the path leading to the tomb of Ramessu VI ; this is in the spur on the west side of the valley, immediately looking up the Hatshapsut ravine. This position proves that the burial, and the robbers' attack on it, took place before cutting the tomb of Ramessu VI. After Lord Carnarvon had arrived, the stairs were cleared. Broken pottery, flowers, and water skins lay about—the remains of the funeral, which could not be re-used after serving for the dead. At the first wall, a break in the plastering showed a thieves' hole, resealed by inspectors. After removing this, a passage was entered, in which was a broken box with names of Akhenaten and Smenkh-ka-ra. Then appeared another sealed door, with a thieves' hole, sealed up. Opening this, the first chamber was seen, containing three colossal gilt couches with heads of Bes, Hathor, and lions ; beds, carved, gilt and inlaid with coloured stones ; the four sides of a chariot, gilt and inlaid ; the throne with Tut-onkh-amen and Queen beneath the Aten rays, on the back, inlaid with turquoise, carnelian and lazuli of indescribable delicacy and grace ; the stool, with Asiatics for the feet to rest upon ; alabaster vases of intricate forms, as yet unknown ; sticks, with a gold head of an Asiatic, and one of filagree work ; gilt sandals ; a stool of ebony with ivory inlay and carved duck's feet ; gilt bronze musical instruments ; a box, inlaid, containing royal robes embroidered, with stones inserted, the most novel and interesting of all the objects ; a box containing emblems of the underworld ; a painted box with hunting scenes ; blue faience vases ; a dummy for royal robes and wig ; rolls of papyrus, which Dr. Gardiner will go out to edit ; great quantities of provisions, and wreaths.

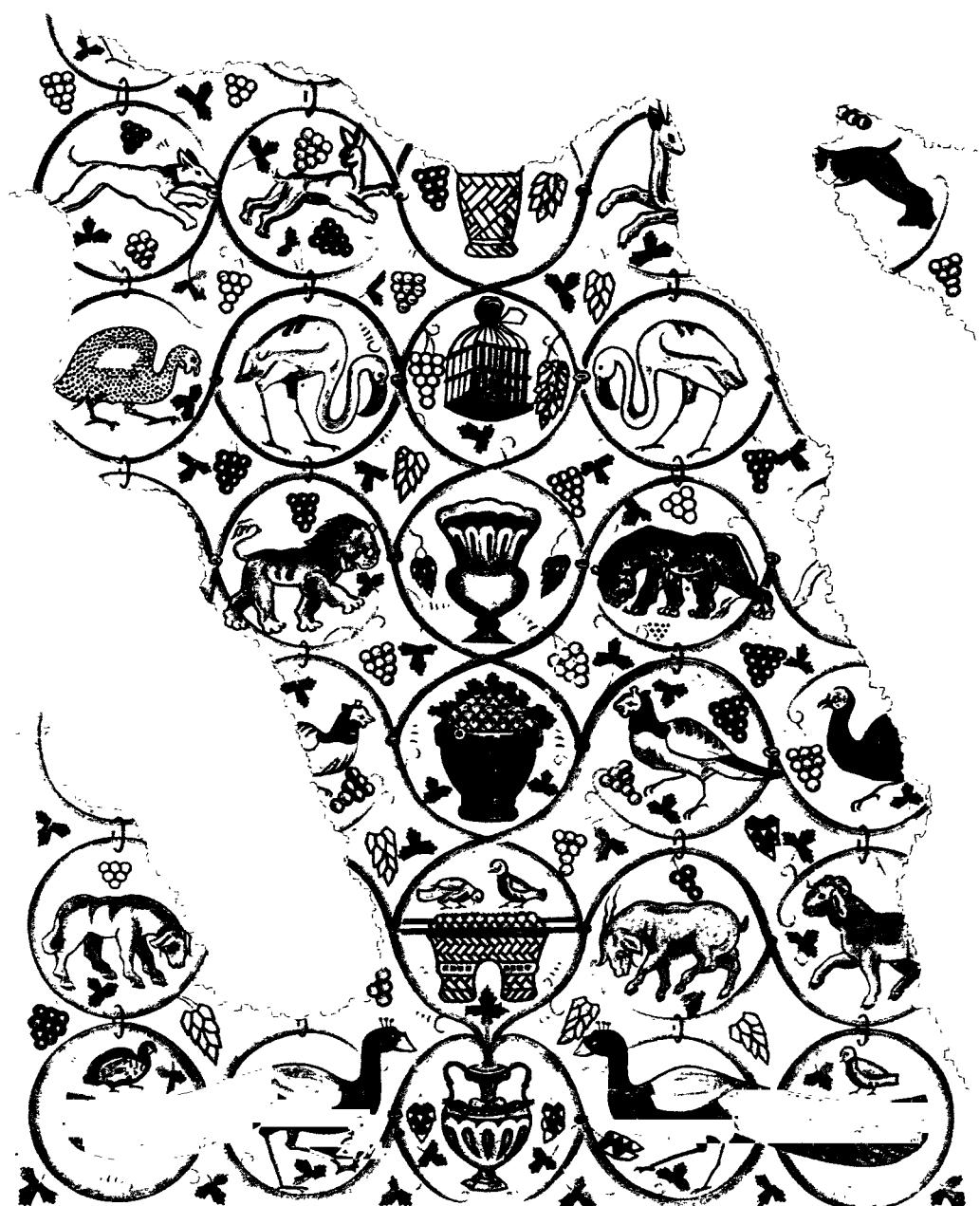
In a second chamber there was a confused pile of chairs, boxes, statuettes, alabaster vases, and more gilt beds, piled up 5 feet high. Another doorway in the first chamber has the life-size wooden figures of Tut-onkh-amen, holding a golden stick and mace, standing on either side. This leads to a third chamber, but with the tell-tale thieves' hole in the corner. It is supposed that Tut-onkh-amen and perhaps other royalties are buried in this third chamber ; but it cannot be entered till a clearance is made. To handle such an enormous mass of delicate objects, Mr. Carter has been to Cairo to buy up cotton wool, wood, and preservatives, and Mr. Lucas, the Government chemist, will take part in the detail of dealing with this treasure. Where it can stand in the Cairo Museum is a puzzle. The museum is full now, and this prize will need a couple more halls to show it. Our felicitations to Lord Carnarvon for his enterprise, and congratulations to Mr. Carter for the result of his years of work, and to Mr. Callender who is with him, on having such a gorgeous experience.

Mr. and Mrs. Brunton, with M. Bach and Mr. Starkey, are at work for the British School at the great cemetery of Qow el Kebir.

Mr. Greenlees is with Mr. Fisher at Thebes.

The intention of the Egyptian Government to alter the law, and leave excavators without any claim on their discoveries, has called forth a united protest from all the British and American workers, who consider that it will bring the present course of excavation to an end. Meanwhile a great prospect opens in Palestine, where the hill of Zion, the site of the palace and tombs of the Jewish monarchy, is to be open to excavation.

+ΤΟΝΔΕΤΟΝΝΕΩΝΔΑΙ-ΛΕΙ
ΜΗΣΑΝΟΤΕΟΣΙΜΤΗΜΗΝΕ
ΚΑΙΟΘΕΟΦΙΛΓΕΩΡΓΙΟΣΟΙ
ΝΑΡΙΟΣΕΝΤΜΒΧΣΤΕΙΚΑΤΑ



MOSAIC FROM SHELLAL, 560 A.D.

ANCIENT EGYPT.

THE SHELLAL MOSAIC.

DURING the war the Australian troops found a great mosaic pavement of a church which had been much cut up by Turkish trenches. This was between Beersheba and Khan Yunis ; and it shows what prosperity existed down to the time of Justinian, in what is now a barren region incapable of supporting a population. As any dated example of mosaic is valuable, for comparison with other mosaics or decoration, it is here reproduced from the copy officially issued in Egypt. The broken border is here omitted, except an example at the top, in order to give the figures on a larger scale. There is a much more broken inscription also at the bottom. The top inscription reads : " This temple with spacious . . . was built by our most . . . and most pious George . . . in the year 622 according to . . ." It is supposed that this was according to the era of Gaza, the nearest city, with an era of 63 B.C., which was also usual in other Syrian cities. This date would be therefore equal to 560 A.D., or five years before the death of Justinian.

The fashion of placing subjects in circles is familiar at 330 A.D. in the mosaics of S. Costanza ; but the development of flowing lines to form the circles comes from the vine pattern with leaf or grapes in the circle, as at S. Vitale, 546 A.D. The idea of placing animals in these circles is seen on the ivory throne of Maximian at Ravenna, 550 A.D. The Shellal mosaic has at the base one of the earliest groups of the vase between peacocks, which is not generally found till from two to four centuries later.

The mosaic was most carefully removed by the Australian troops, stored in Egypt during the war, and then removed to Australia. Beneath the inscription was found a burial, which was doubtless that of " our most pious George " who founded the church.

W. M. F. P.

AN OLD WORLD CUBIT IN AMERICA.

EVERY connection that can be traced between the civilisations of Asia and America is so important, for lighting up one of the greatest of historical questions, that it should be put on record, in hope of drawing out further information. The School of American Research at Santa Fé, New Mexico, has been exploring the remains in the Chaco Canyon, which was proclaimed a National Monument fifteen years ago. An account of the work, with many illustrations, is given in *Art and Archaeology* for September, 1922. The structures described by Mr. Edgar Hewett are built of naturally faced pieces of sandstone, like tiles, about 8 to 12 inches square and a couple of inches thick. They are laid with remarkable regularity to form walls with flat faces, which were covered with white plaster.

The principal class of remains are circular areas, with a bench about 3 feet high, around, and a wall behind that about 6 feet higher. Joining to this is a square chamber; and around the circular wall is another beyond it, and the intervening space divided, by cross walls, into between eight and fourteen chambers. In the floor of the great area are two rectangular pits, in which had been a great burning; they are about $3\frac{1}{2}$ feet deep. The great size, the regularity and also the fine finish show the importance and the care in construction of these works, and justify us in examining whether they were made by measurement.

On looking over the measurements that are given it is obvious that they indicate a unit of about 20·7 inches. This is not found by guessing, but by trying all simple ratios between the numbers on a slide rule, until a series of multiples is found which shall be in proportion to the quantities. Thus at Chattro Ketl—

	Inches.						
Diameter	750	÷ 36	20·8				
Bench, wide	42	2	21				
Post holes apart	312	15	20·8				
Altar	61 or 62	3	20·5				

At Aztec, San Judu River ($36^{\circ} 50' N.$, $108^{\circ} 5' W.$)—

Outside outer wall diameter	827	÷ 40	20·67			
Inside outer wall diameter	786	38	20·68			
Outside inner wall diameter	638	31	20·58			
Inside inner wall diameter	*579·5	28	20·70			
Inside lower bench	*495·5	24	20·65			
Large chamber, wide	249	12	20·75			
,, long	208	10	20·8			
Post holes apart, over all	290	14	20·71			
,, „ „	283	14	20·21			
,, „ „	310	15	20·67			
,, „ „	308	15	20·53			
Pits, long	*102	5	20·4			
,, wide	* 42	2	21·0			
Wide curved chamber	*124	6	20·67			

In South-West Colorado—

Circular wall diameter	1,632	80	20·4		
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The starred measures are direct statements; others are measured from the plan in *Anthropological Papers* of the American Museum of Natural History, xxvi, Part 2, 1921.

Other dimensions are not detailed enough to give an accurate result.

Now from these it seems clear that the unit is about 20·68 inches by the most accurate measures. In the circle at Aztec it appears that the inside of the benches and the outer wall are the simple numbers of design (24, 25, 40), and the intermediate numbers result from 7, 3, 3 and 2 cubits for chambers and walls. This accords exactly to the well-known Egyptian cubit: 20·62 in the best early example, 20·65 in later cubit rods, 20·76 on the Roman Nilometers. Babylonia had a rather longer form, 20·88 for the cubit of Gudea's plotting scales, carved on the drawing-board that rests upon his knees in the Louvre statues. This was also the standard of Asia Minor, 20·6 to 20·9, mean of all 20·63. How could this reach New Mexico? It was evidently Asiatic. We have evidence from weights of an Asiatic diffusion of a Babylonian original over India, China and Etruria. If the cubit similarly passed to China, it might thence reach North America. It has been already pointed out in this Journal (1916, p. 108) how the cross at Palenque (Southern Mexico) was in its detail of ornament derived from Italian crosses of about the eighth century, probably carried to China by the Nestorian mission. By the same route the Asiatic cubit may have passed over to the New World at some earlier period.

W. M. FLINDERS PETRIE.

WAS THE CONSTANTINOPLE OBELISK PART OF THE 108-CUBIT
OBELISK OF HATSHEPSÔWET ?

WHILE studying the unfinished obelisk, now lying in a quarry at Aswan, which I excavated last season, I worked out, with a fair degree of accuracy, what internal strain due to bending would be set up when the obelisk, if completed, were supported at its centre of gravity. The dimensions of this obelisk are, in the rough :—

Overall length	41·75 metres.
Side of base	4·2 ..
Base of pyramidion	2·5 ..
Height of pyramidion	4·5 ..

The total weight, when fine-dressed, would have been just over 1,100 tons (English).

The result of my calculations is that, if this obelisk were supported at its centre of gravity, the stress due to bending would have been 1,086 lbs. per sq. in. The maximum stress, or " modulus of rupture " for granite is given as 1,500 lbs. per sq. in. (It may be noted here that if the obelisk is supported at the base and the base of the pyramidion, the stress set up will be very nearly the same, the difference being in the plus or minus effect of the pyramidion in the moment formula.)

If an obelisk cannot endure the strain set up due to its own weight, an unevenness in the packing when it was being undercut in the quarry or the slightest concavity in the bed on which the rollers run (which seem to have been used), would result in the obelisk snapping across ; this applies even more in considering the question of its erection. I believe that a modification of the theory that the obelisk was let over the edge of an embankment is generally accepted. If this was the means employed, it is essential that the obelisk be rigid enough to resist breaking when supported at its centre of gravity. The theory that the obelisk was pulled and levered up while engaging in the notch on the pedestal is, to me, untenable for a 1,100-ton obelisk, however well it may have succeeded with the 35-ton obelisk of Seringapatam (Barber, *The Mechanical Triumphs of the Ancient Egyptians*). The standing obelisk of Queen Hatshepsôwet at Karnak never has engaged in the pedestal-notch, as the inner edge of the notch, unlike those of all other obelisks I know, is quite sharp, and the obelisk now stands several inches to a foot away from the notch (as it does not stand square on the pedestal).

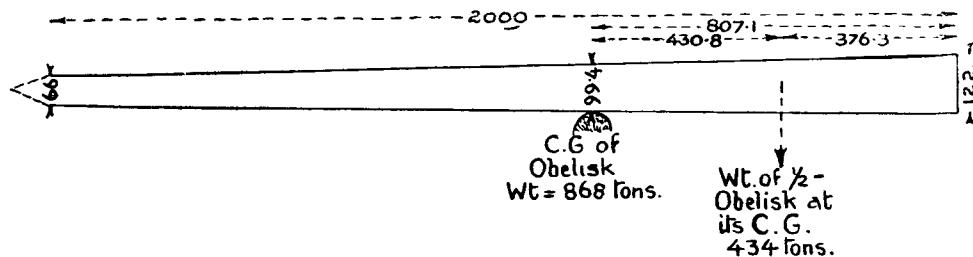
Having reached the figure mentioned above, which leaves a very narrow margin considering the slight flaws unavoidable in very large granite blocks, it occurred to me that if the Constantinople obelisk is, as held by several authorities, merely the top of the 108-cubit obelisk mentioned in the well-known inscription of Thutiy as having been erected by Hatshepsôwet, it would suffer an even greater strain, if supported at its centre of gravity or ends, than would the Aswan Obelisk, had it been completed.

Turning to Petrie, *A History of Egypt*, xviith and xviiith dynasty, pp. 131, 132, we read, referring to the 108-cubit obelisk (L.D. iii, 27, 11) : " Taking the lighter obelisk, that of Hatshepsut, which weighs about 300 tons, if the thickness were increased proportionally to the length on 185 feet, it would imply a weight of over 2,000 tons. This is so obviously excessive (as the heaviest blocks yet

known are the colossi of Ramessu II, 800 tons at the Ramesseum, and 900 tons at Tanis), that we cannot suppose that the thickness was proportionate to the height. Probably, therefore, the missing obelisks should be about the same width at the top as the other great obelisks, and wider at the base.

"The only obelisk that could fit this requirement is that of Constantinople. It is only the top of a broken obelisk; but the inscription on the south face is exactly parallel to that on the west face of Hatshepsut's obelisk. If it continued like that, its height would come to about 120 feet; but it may, of course, have been a longer inscription. If we suppose that it was 172 feet (or 100 cubits, leaving 13 feet for the pedestal), then, as the top is about 5 feet 6 inches wide (by photograph), and the broken end 7 feet wide, the base would have been 10 feet 2 inches wide, there being no perceptible entasis. As the Lateran obelisk is 9 feet 9 inches, this size of base would be very probable for a longer mass." The calculation of the stress set up in the proposed obelisk is as follows:—

If we allow 7 feet for the pyramidion, since we have no exact details of it, and since it affects the problem very little, we have a length of 165 feet or 2,000 inches, the side of the small end being 66 inches and that of the large end 122 inches.



Centre of Gravity of the whole Obelisk.

The distance of the centre of gravity from the large end (D) of a truncated pyramid of length l , having sides to the thicker and thinner ends A and a respectively, is given by the formula:—

$$D = \frac{l}{4} \left\{ \frac{A^2 + 2Aa + 3a^2}{A^2 + Aa + a^2} \right\}.$$

Substituting the dimensions given above, we have:—

$$\begin{aligned} D &= \frac{2000}{4} \left\{ \frac{(122)^2 + 2(122)(66) + 3(66)^2}{(122)^2 + (122)(66) + (66)^2} \right\} = 500 \left\{ \frac{14884 + 16104 + 13068}{14884 + 8052 + 4356} \right\} \\ &= \frac{500 \times 44056}{27292} = 807.12 \text{ inches.} \end{aligned}$$

Width of Obelisk at its Centre of Gravity.

By proportion, this is equal to—

$$122 - \frac{807.1}{2000} \text{ of } (122 - 66) = 99.4 \text{ inches.}$$

Centre of Gravity of right-hand half of the Obelisk when supported at Centre of Gravity of Obelisk.

Here we have, in the formula quoted above,

$$l = 807.1, A = 122 \text{ and } a = 99.4.$$

Therefore the distance of the Centre of Gravity of the half-obelisk measured from the thicker end is :—

$$\begin{aligned} & \frac{807 \cdot 1}{4} \left\{ \frac{(122)^2 + 2(122)(99 \cdot 4) + 3(99 \cdot 4)^2}{(122)^2 + (122)(99 \cdot 4) + (99 \cdot 4)^2} \right\} \\ &= \frac{807 \cdot 1}{4} \left\{ \frac{14884 + 24253 \cdot 6 + 29641 \cdot 08}{14884 + 12126 \cdot 8 + 9880 \cdot 36} \right\} = \frac{807 \cdot 1 \times 68778 \cdot 68}{4 \times 36891 \cdot 16} \\ &= 376 \cdot 3 \text{ inches.} \end{aligned}$$

The distance of the Centre of Gravity of the half-obelisk from the point of support will then be $807 \cdot 1 - 376 \cdot 3 = \underline{\underline{430 \cdot 8}}$ inches.

Weight of the Half-obelisk (W).

Calling A = side at one end, and a = side at other end, the volume is $A^2 + Aa + a^2 \times \text{length} \div 3$, or $(99 \cdot 4^2 + 12127 + 122^2) \times 807 \cdot 1 \div 3$, which \times weight per cubic inch (at 170 lbs. to cubic foot) = 435.9 tons. The obelisk then, if of two similar halves, would weigh 872 tons.

Now (Stress due to bending) (Modulus of Section) = (Sum of moments on one side of support).

The modulus for a square sectioned beam is one-twelfth the cube of the side, or $\frac{(99 \cdot 4)^3}{12}$.

Substituting we have :—

$$S \times \frac{(99 \cdot 4)^3}{12} = \frac{(110 \cdot 7)^2 \times 807 \cdot 1 \times 170}{1728} \times 430 \cdot 8,$$

$$\text{from which } S = \frac{(110 \cdot 7)^2 \times 807 \cdot 1 \times 170 \times 430 \cdot 8 \times 12}{(99 \cdot 4)^3 \times 1728} = 5.120 \text{ lbs. per sq. in.}$$

Thus it would not carry a third of its own weight if supported at the middle or the ends, as granite breaks at 1,500 lbs. per square inch. If the Egyptians could have handled and erected this obelisk, it would have been the greatest engineering feat which has come down to us.

With the exception of the obelisk of Hatshepsōwet at Karnak, which has rather a slight taper, there is no very great difference in the proportions of the large obelisks now known. Since the resistance to bending of beams *with the same relative dimensions* is proportional to their linear measurements, it follows that, with obelisks, there must be a limit to their possible length. Taking the sharpest known taper, this length is somewhere about 140 feet, though I doubt whether an obelisk of even that length could be erected unbroken, since granite is so rarely perfectly homogeneous.

The subject of the quarrying, transport and erection of obelisks is treated in detail in my volume *The Aswan Obelisk*, which is now in the press.

R. ENGELBACH.

[We may note here what would be the size of an obelisk 172 feet (or 100 cubits) long for it to carry its own weight. It would need to be about 36 feet square at the base, and 19 feet at the tip, and would weigh about 11,000 tons. It is evident that such a size and weight would be quite impossible ; there must, therefore, be some other explanation of the boasted size of 108 cubits.—F. P.]

THE RISE OF PRICES IN ROMAN EGYPT.

A VALUABLE collection of material relating to the course of prices in the Ptolemaic and Roman period in Egypt has been issued by Dr. Angelo Segre, under the title *Circolazione Monetaria e prezzi nel mondo antico ed in particolare in Egitto* (Roma, Libraria di Cultura, 1922). Such a study has a special interest now that Europe is suffering from precisely similar troubles of depreciation of currency, and consequent rush of prices upward. The Roman world did not suffer the worst modern effects of that immoral course, as there were no permanent State loans nor paper debentures. Loans between individuals were only for short periods, and could be called in and readjusted without much loss. There was nothing like the entire confiscation of all the loan capital of the saving classes, such as has lately smitten Europe in the East, and partially in the West. The effects of that in wiping out the saving class, and deterring from saving, in Austria and Germany—to say nothing of Russia—will be a fatal injury to the stability of those peoples for generations to come. It is far worse in effect than the War which preceded it. Every stage of this terrible process of destruction in the Roman Empire has its practical interest for us, who are watching a similar dissolution. The depreciation and race between wages and prices sent up nominal prices to 5,000 and at last to 500,000 of their true value; in this crisis, labour ceased to be paid in cash, and payment was in corn; at last everything went on to a fixed pure gold basis, the same course which is beginning to be accepted in Europe.

For the examination of the true value of nominal money there is no better basis than wheat in the ancient world. In modern times it is complicated by importation from entirely different economic States; in the Roman world there was one general currency, and no wheat came from outside that. The production was under various conditions, and therefore was averaged; there was little difference of quality, and no variation of demand. Labour varied much more in quality, while slaves, animals, oil and wine varied greatly. The standard quantity of corn in Egypt was the artaba, equal to 0·8 bushel. We may first note how closely the true value of debased money was understood; the amount of silver was by no means obvious, yet it was known and the value reckoned accordingly. Taking a middle date for the main period, we find on the average that the price of the artaba was:—

B.C. 250	..	..	..	2 drachmae	= 107 grains silver.
A.D. 100	..	..	..	8 dr. alloyed	= 69
200	..	..	..	16 „ „	63
600	..	..	..	1·4 (by gold)	70

The last is by gold value, taken as $14\cdot4 \times$ silver. This suggests that silver became rather scarcer, or more in demand for plate, between the early Ptolemaic and early Roman age; otherwise the silver value of corn was remarkably stable over many centuries of great political change. Comparing 70 grains of silver per artaba with modern values, it would be 530 grains per quarter; and on our usual price (before recent changes) of silver, 5s. per 480 grains, this would be 5s. 6d. a quarter, or about a tenth of the modern price of corn. Silver and gold therefore were about ten times more valuable than recently.

In looking at the prices of labour it is remarkable how uniform they remain when reduced to silver values. From 270 B.C., at 1 to 2 obols, the price slowly rises in relation to corn, and in corn values the rate is $1\frac{2}{3}$ obols, in 100 A.D. The payment in corn at 338 A.D. is equal to $1\frac{1}{3}$ obols, reckoned at the old rate of 2 drachmae of silver per artaba. In the seventh and eighth centuries the gold rate equals $1\frac{1}{3}$ obols. So for eleven centuries the real silver value of a day's work was about $1\frac{1}{2}$ obols. This seems very low; but as we saw with corn, that precious metals were worth about 10 times the present amount, it is now equal to $2\frac{1}{2}$ drachmae, or $\frac{1}{3}$ of an ounce of silver—in last century values 1s. 8d. As the wages in Egypt were 5d. a day, or up to 10d. or 1s. before the war, it seems that the ancient $1\frac{1}{2}$ obol had about double the purchasing power of even the higher modern wage in Egypt. Since the war the wage is about the ancient value, but prices are higher in proportion.

Wine followed a slightly different course, probably influenced by changes in the average of the quality recorded. It shows a slight fall from 300 to 100 B.C. and no distinct rise till about 150 A.D. At 300 the wine prices, like the corn, rushed upward. In the fourth century the gold values quoted are about those of the higher qualities of the Ptolemaic time. A very low price appears for soldiers' wine, which was probably little more than vinegar; and by 690 rather a high price, suggesting that wine was scarce.

The price of slaves is naturally very variable, from 55 to 570 drachmae real value, average 250. This in equal modern values would be £20 to £240, averaging £100. Under Philadelphos little girls from Syria sold at £20 to £60, in modern corn values.

Among cattle, the ass was naturally of various quality, from 26 to 100 real drachmae of silver, average 53; or by corn values £7 to £28, average £15. This is about the modern price. Camels varied less in general, as might be expected, for there were no fancy prices; from 60 to 200 drachmae, with an average of 140; or in modern corn values £17 to £56, average £39. For a horse the common price was 40 to 50 drachmae, but a very fine black Cappadocian was 1,100; in modern corn values £11 to £14, and £300 exceptional. The price of sheep was the same in Byzantine as in Ptolemaic time, about 8 drachmae, equivalent to £2. Hogs were about the same; but goats were only 1 or 2 drachmae. All of the modern equivalents of these animal prices are in corn values much the same as at the present time.

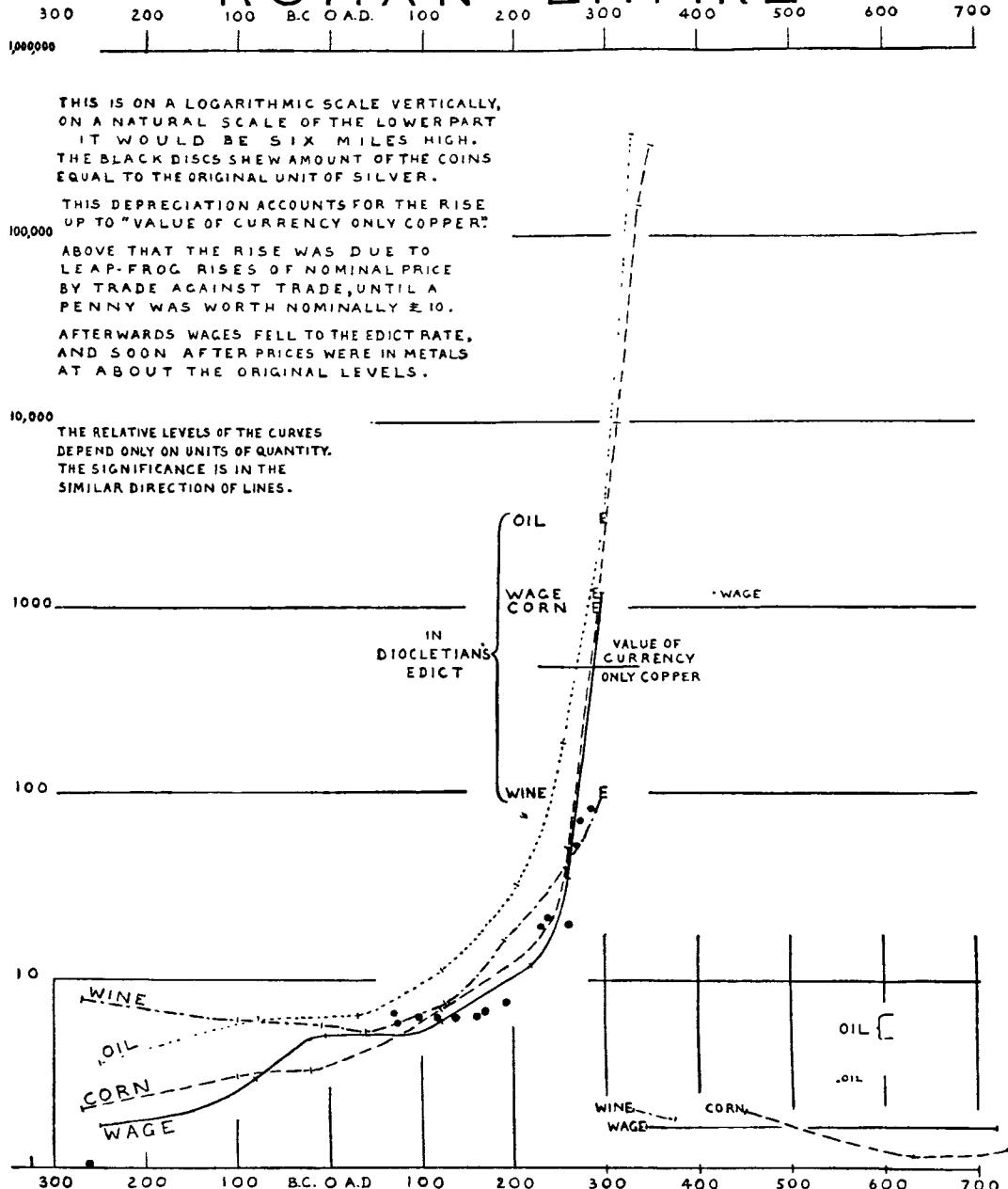
In order to be able to show the whole course of prices over such an immense variation, the only way is to draw it on a logarithmic scale, as on this diagram: if it were all in proportion to the bottom part it would need to be some miles long. As far as about the second century A.D. the lines of price were drawn from the mean lines of diagrams of all the data; beyond that, where the prices rise rapidly, the single data are spotted on this diagram and the lines drawn through them. The first and obvious result is that the celebrated Edict of prices under Diocletian in 301, marked here as E, was not unfair or arbitrary; it falls well into the line of actual values. The lines of wheat and wages keep close together through the E values. The oil and wine values of E may have been too low for the time, keeping to values of twenty years earlier, for the wage and wheat lines cannot have gone up vertically through all the E points. The E values are closely about the copper value of currency.

The real intention of the Edict is now explained. It was not a foolish attempt to stabilise prices by law; Diocletian was too able an organiser and economist to

do that. But coinage having come to mere copper, he tried to check the trade unions from making a nominal rise beyond copper values. The aim was to avoid artificial inflation by "money of account," and keep to real values of metal.

That this astounding rise of half a million, or a million, to 1 was not due

THE RISE OF PRICES IN THE ROMAN EMPIRE



to proportionate scarcity is obvious, for in more disturbed and poorer ages the wheat and wage curves of 500-700 A.D. go back to the old silver values of the beginning. The slow decline in the late curve of wheat probably shows an exhaustion of gold, but wages seem level in that age. Wine was far cheaper,

probably because all the finer kinds were extinct and only the sour wine was left, which was previously at this level for soldiers' rations.

On looking at the coinage, there does not seem any sufficient cause for such a change of values. The alterations were not so much in weight as in the amount of silver in the billon. The worst that this change can make is to reduce a nominally silver coin to a 480th of its value, when it arrives at plain copper. The changes in weight were very slight. The silver denarius ends in the fourth century A.D. at just the same weight as it was B.C. The follis does not decrease, nor its half. The Byzantine coinage, numbered 40, 20, 10, 5, 2, fluctuates, but does not diminish; and it seems, by the weights, as if the 10 of that scale was the denarius, which had already been reduced to mere copper.

The worst examples of reduction of weight are outside of the system of Rome or Constantinople. Tetricus had a barbaric coinage in Gaul or Britain, which ran the half Antoninianus of 40 grains down from 35 to 10 grains. The Egyptians struck blank spangles of copper, which copied the 20-grain Byzantine copper with only 1 or 2 grains of metal. Yet even such reductions could not make more than a reduction to a twentieth of the value by weight, and there is no evidence of such a change imperially.

We are faced, therefore, with changes of value of perhaps 1,000 to 1, by change of metal and weight, but these cannot possibly explain a change of a million to 1 in nominal values. The only explanation of such changes seems to lie in a race of prices against wages, such as we experienced just after the War. In trying to avoid the general loss each union of wage-earners insisted on more pay (increasing the loss of all producers); in turn, production demanded a higher price. We ran perhaps to double in this race, and then saw it was hopeless. The Roman world seems to have run ceaselessly on this line, until prices and wages were a thousand times their value. This shows the terrible bondage of the trade unions, in which all labour was frozen; without a rigid despotism over a trade it would have been impossible to force an arbitrary rise of wage above the level of other trades, and still more to force it so that metallic currency became of fictitious value in name, though not in purchasing power.

How could the currency bear it? It never affected gold values of goods; the gold solidus was worth 16 silver drachms, or 7,680 copper drachms, but was reckoned during the mad rise of nominal prices at 600,000 drachms, or 100 talents, and rose even higher. Thus, so far as gold was concerned, the rise was purely in "money of account." In mediaeval times various European nations traded entirely in "money of account," all the coins that were current having their fractional values, just as I have handled a dozen different currencies of irregular values for payments in "money of account" in Egypt. There is nothing improbable, therefore, in the whole trade for a century or two going on in the Roman world by money of account, incessantly driven higher by wages, by prices, by increased rating of the currency, on a fictitious basis. As a collateral matter, the dissolution of the third century must have closed a large amount of trade; there was therefore an excess of small currency floating, and it tended to depreciate. This, however, was only a predisposing cause which started the system, as, in the finds of silver and billon coins buried later than Gallienus, there are very few coins before his time. There was an immense amount of burying of money during his reign, nearly half the groups that are found ending during his reign, and about a third of the groups start with the currency of his reign. Obviously all the old money of higher standard was either buried or melted up—one of the clearest cases of bad money driving out good.

Regarding the work of Segrè here noticed, it is a pity that so valuable a collection of material should have no list of the works quoted, nor any explanation of the abbreviations used for references. The students of papyri, such as Reil in his study of trades, forget that their sources and references are peculiar to their subject. There are also some arithmetical slips on p. 145 which suggest that a slide rule would be of value to the author. I have to thank Mr. Grafton Milne for many references, and the weights of his large collection of the Alexandrian mint, which he has most kindly supplied.

W. M. FLINDERS PETRIE.

[There has been a difficulty about the price of hiring slaves in the xviiith dynasty papyri (*Z.A.*, xlivi, 31). The prices are expressed in rings, of which 12 were equal to 1 *deben*. This shows that the rings were a rather light shekel weight, $12 \times 125 = 1,500$ grains. All other values would be impossibly low if the day's wage was taken at literally a single day. It cannot mean so many days in a week over a long period, as 17 days is named ; but it might mean the hire of so many days' service in every month during a year. The result would be that a nominal day (= 12) was fixed at 2 shekels, so a single day would be $\frac{1}{6}$ th shekel, or just the 2 obols that it was in Ptolemaic silver. As certainly copper was far commoner in the xviiith dynasty than silver was under the Ptolemies, the rings cannot have been of copper. On this basis the other prices work out at : goat, 1 drachma ; cow, 12 ; bull, 16 ; female slave, 24 drachmae ; land at 4 drachmae an " acre " must be the hire for one cropping. Such prices are about half, or rather less than the Ptolemaic prices, but that would not be improbable.—W. M. F. P.]

DUALISM IN AFRICAN RELIGIONS.

IT is possible to consult many works on comparative religion without being able to gain any ideas on African religions that are at once true and clear. Comparatively few works have appeared in which religious ideas, and more especially West African religious ideas, have received adequate notice. For the ordinary man African religion is characterized by the term "fetishism," one of the most indefinite and most ill-used expressions that it is possible to imagine. Properly speaking, fetishism is the doctrine of spirits embodied in material objects, and nothing corresponding to the popular idea of fetishism can be discovered in West Africa.

Owing perhaps to the dominance of this false notion of fetishism, African religions are often conceived of as homogeneous, though in point of fact there is as great diversity there as in other parts of the world. Mistaken etymologies have also been a source of misunderstanding, and for many years there has been current a myth that the word Tsui-goab, the name of the Hottentot god, means "Wounded Knee."

A year or two ago Dr. Struck unearthed an account of the Hottentots in a work published in 1700, de la Loubère's *Description du Royaume de Sham*, which had apparently been completely overlooked by bibliographers and descriptive writers alike. In this work are eight pages devoted to the "Hotantots," whose name appears to be derived from a word which they repeated in their dances. Regarding their religion, de la Loubère says: "I was told at first that they had no religion; but I learnt later that, though they have neither priests nor temple, they do not fail at new and full moon to celebrate public festivals which represent their religious rites. I suspect that they are to some extent tinged with Manichaeism, for they recognize good and evil principles, whom they call 'captain of the height' and 'captain of the deep.' The former, they say, is so good that there is no need to pray to him; it is enough to let him go his own way, as he does nothing but good. But the 'captain of the deep' is malevolent, and they have to pray to him to prevent him from causing mischief. That is what they say, but to all appearances they do not pray much."

Our principal authority for the Cape of Good Hope in the early eighteenth century is now recognized to be Peter Kolbe, and the above-cited account is in agreement with what he says. We may therefore assume that this dualism, which was rejected by Ratzel as a European misinterpretation, actually corresponds to the facts, the more so as in our own day Schultze has reported of the Nama of the Kalahari that they recognize a good (black) and an evil (red) god, precisely as do the Hamitic Masai and Nandi, north of the Equator. No reader of A. C. Hollis's accounts of the latter two tribes will be tempted to interpret his data as to dualism, as the result of European misinterpretation. We may therefore accept as accurate the older accounts of Hottentot religion.

Kolbe speaks of two gods—Touquo (perhaps a miswritten Tsui-goab), the evil god, and Gounia, the moon, the good god who gives honey, cattle and milk. There is little doubt but that they are identical with the pair mentioned by de la Loubère.

The Hottentots are completely isolated in South Africa, and there is some controversy as to their linguistic position. Meinhof has assigned them to the Hamitic family, and this near agreement in matters of religion adds force to the argument from language.

Passing over the facts as to the Masai and Nandi, who are Hamites, not negroes, I turn to the area of the Lower Niger, a centre of the reincarnation creed, which I have, for other reasons, brought into relation with the Egyptian belief in the *ka* (*Jl. Eg. Arch.*, 1920, VI, 265–273). The Edo of Benin City believe that each man has two *ehi* (geniuses or doubles), one good, the other bad ; and precisely the same belief is found among the Ewe of Togoland, intimately related in language to the Edo, under whose domination they stood in the seventeenth century, as we learn from Romer. On the other side of the Edo are the Ibo, and in their reincarnation beliefs also we find the same dualism ; in the Asaba area each man is believed to have two *eri*, one good, the other bad. We know less of the beliefs of the Yoruba, who lie immediately to the west of the Edo ; it is therefore uncertain whether this feature reappears in their creed.

These facts would have perhaps little bearing upon dualism in religion were it not that among the Edo the dualism repeats itself in their dogmatic theology, so to speak. Their supreme god is Osa, probably a sky god ; the Edo proper, though not, so far as I recall, the surrounding tribes of the same stock, have duplicated Osa. They believe in Osalowa, Osa of the house, and Osaloha, Osa of the bush ; the latter is regarded as malevolent. Their names correspond to these given to the *ehi* and *eri*.

The Ewe creed is different, but there are points in it which lead to the conclusion that their beliefs have undergone great changes in a not very remote past ; they have now a regular pantheon, by no means a characteristic of negro religion.

The Yoruba creed is in this feature similar, though the details differ. For this tribe we have really only one fundamental text, the account published in 1884 by Baudin, which Ellis issued again in his *Yoruba-speaking People* ten years later without a hint that it had appeared in print before. The Yoruba believe in a mischievous being, Esu, whom they have handed on to the Edo, their neighbours on the east. We have no account of the cult of Esu for the Yoruba, but in Benin I found that he had a priest and received sacrifices, though his ritual differed from that customary in the cult of other deities. The Ibo again offer sacrifice to Ago, a mischievous sprite of the same order.

So far, nothing has been said of the peoples of the Gold Coast, who share with the tribes already mentioned the reincarnation creed but do not, so far as we know, hold the view that the genius is double, both good and bad. Dualism is, however, found in their theology, for Sasabonsum, a deity of a red colour, is everywhere propitiated. It is a singular circumstance that the opposition between red god and black is repeated here.

For the rest of West Africa, partly, it may be, owing to our profound ignorance of the beliefs of many tribes, there is no evidence of dualism save among the Igara and the Kerikeri. The former, who are in language closely related to the Yoruba, worship a good god, Ojuosi, and an evil god, Opoku, according to Temple's *Notes on the Native Tribes*. The same work tells us that the gods of the Kerikeri are Dege (good) and Fifila (bad). It can be asserted with some definiteness that the Temne of Sierra Leone, though their creed included good and bad *krifi* or spirits, had no real dualistic element in their religion.

It has been pointed out already that in East and South Africa the creed of dualism (if we except some of the Nyasaland Bantu) is limited to tribes of Hamitic speech. It is, in this connection, by no means negligible that Yoruba (one of the dualistic tribes of the west) is also one that would be mentioned in any account of Hamitic influence as manifested in language.

It must, however, be admitted that the Yoruba, like the Ibo, have but a very attenuated dualism, so far as dogmatic theology goes. But if dualism is foreign to the negro mind, this is precisely what we should expect ; alien influences are assimilated or modified according to whether they find an echo in the native breed or not. Were it not for the dualistic features in the reincarnation beliefs it would perhaps be hardly worth while considering this side of negro religion at all.

When, however, we find dualism in a well-developed form in a creed which has, at least in part, a foreign element in it, it is worth while to put the question whether the situation is not best explained by supposing that the dualistic features in the reincarnation creed are not a reflection of a feature which came to them originally as a part of a religious creed, and did in fact obtain some small hold in native religion, but flourished unchecked in another field to which it was transplanted—that of human psychology.

It can hardly be accidental that dualism in religion is seen at its fullest development in Benin, where the type of house is wholly alien and absolutely unsuited to climatic conditions, though it does not follow that house form and creed were transmitted from the same area and in the same manner.

In putting together these few considerations I do not mean to commit myself to any theory of Egyptian origins ; but I wish to present the facts as one of the problems of African religion which, if they are not due to an internal development to which we should expect to find many parallels among other tribes, can best be accounted for by some influence from the Mediterranean area. It is easier to label elements of material culture with their date and country of origin ; but if we admit transmission in the one case we cannot well refuse to do so in the other, even though the identification of sources may prove difficult or impossible.

NORTHCOTE W. THOMAS.

[A possible relation in Lower Nigeria with the great dualism of Horus and Set in Egypt may be noticed in Egí the good and Esu the evil deity, at Asaba on the Niger, and Yoruba adjoining on the west.—F.P.]

ANCIENT EGYPTIAN MATHEMATICS.

CONSIDERING the fact that most of the mathematical learning of ancient times can be traced back to Egypt, it is certainly surprising that we have recovered so little in the way of papyri or other records dealing with the mathematics of Ancient Egypt.

With the exception of the so-called Rhind Papyrus and a few isolated examples of accounts and temple gifts, we have very little to work upon.

Apart from the Egyptian records, the earliest mathematical knowledge dates back to Thales, who in 600 b.c. himself visited Egypt. He wrote on eclipses, the heights of pyramids determined by the lengths of their shadows, the angles in a semicircle and similar problems.

Pythagoras studied in Egypt in the sixth century b.c. Plato spent 13 years at the University of On—Heliopolis—about 400 b.c., and two centuries later Euclid made a name for himself as professor at Alexandria.

The study of mathematics arose out of necessity. Arithmetic was essential for housekeeping, business and government. The need for geometry was of particular importance in a country such as Egypt, where boundaries of property were liable to be obliterated by a fluctuating river. It was essential to have some means of preserving the boundaries of fields and of re-measuring the land which the waters had altered. Herodotus (II, 109) tells us that geometry originated in this way. Diodorus also refers to the fact (I, 81).

The Rhind Mathematical Papyrus and the few other rather scrappy records are but isolated pieces of mathematical work.

The papyrus was copied about 1700 b.c. from an earlier work, dating back, perhaps, to 2000 b.c. It appears to be a handbook on the use of fractions for the agriculturalist, and gives tables and worked-out examples showing how to deal with problems such as the scribes of estates would meet with in their daily duties—the division of a number of loaves among a gang of men, the amount of grain required to fill a granary, and so on.

The first part deals with arithmetic and the use of fractions. Then follows the solution of certain equations, problems on division in unequal shares, and on volumes of granaries. The geometrical section concerns the areas of fields of various shapes. Then come the pyramid calculations and a number of problems of a practical nature.

From this work and the other meagre records we can glean some information as to the mathematical notions of the Egyptians.

From the first dynasty onwards, a decimal system of numeration was in use involving high numbers running into millions. There was a separate sign for unity and each multiple of ten up to a million. (See Fig. 1.)

Multiplication was effected by successive doublings, thus :—

“ Calculate 9 to 6 times.

$$\begin{array}{r} \cdot \quad 9 \\ * \quad .. \quad 18 \\ * \quad 4 \quad 36 \\ \hline \end{array}$$

6 54 together.”

Here the scribe had to multiply 9 by 6. On the left, he indicated by dots or figures the multiple of 9, written down . As the work proceeded he watched these numbers and, ticking those which totalled 6, completed the addition on the right.¹

Stroke	1	1	1
Hier.	n	10	
Cord	c	100	
Lotus Plant	g	1000	
Finger	||	10,000	
Jadpole	g	100,000	
God., Heh	g	1,000,000	

1,234567 was written thus :-



Each such sum, therefore, involved writing out part of the multiplication table. The Egyptian never seems to have tumbled to the fact that his work would have been simplified by tabulating the multiples or learning them by heart as we do.

Division was treated as a form of multiplication in the following way :—

“ Multiply 7 to find 77.

$$\begin{array}{r} * \quad \cdot \quad 7 \\ * \quad .. \quad 14 \\ \quad 4 \quad 28 \\ * \quad 8 \quad 56 \\ \hline \end{array}$$

11 together.”

In this case, in dividing 77 by 7, the successive doublings bring the scribe to the number 56 : he then sees that 7, 14 and 56 add up to 77. Ticking 1, 2 and 8, he adds them to obtain the result, 11.

¹ In these examples, the ticks of the scribe are replaced by asterisks.

The fractional system was complicated since (with one exception considered later) only fractions with unity in the numerator were used in the working out of examples, thus:—

“ Multiply 8 to find 19.

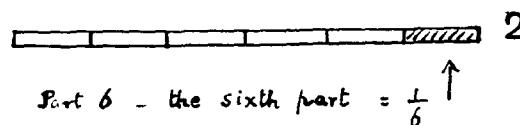
$$\begin{array}{r} \cdot 8 \\ * \dots 16 \\ * \frac{1}{4} 2 \\ * \frac{1}{8} 1 \end{array}$$

together $2 \frac{1}{4} \frac{1}{8}$.

Here the fractions $\frac{1}{4}$, $\frac{1}{8}$ are not added by reduction to a common denominator, but are written alongside the integral part of the result as shown.¹

The fraction of smallest value occurring in the Rhind Papyrus is $\frac{1}{3432}$.

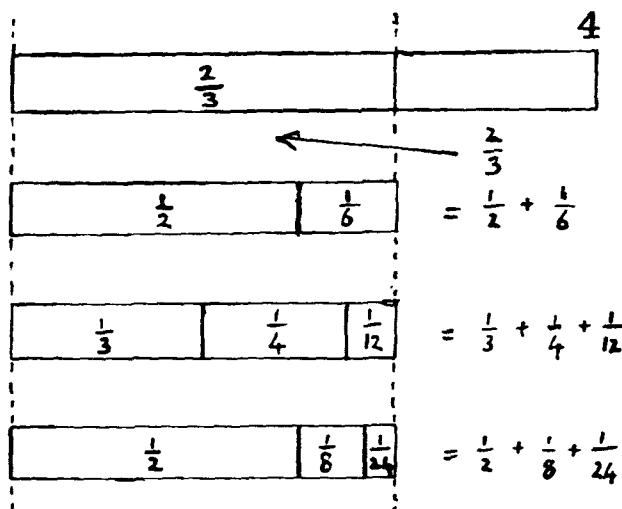
The Egyptian appears to have conceived of the fraction as the last part of the divided whole, thus:— $\frac{1}{6}$ was “the sixth part,” “part 4,” namely, the last and shaded portion of the diagram, Fig. 2. He could not work with “mixed fractions” such as $\frac{7}{15}$ or $\frac{3}{11}$. These conveyed no meaning to him.



$$\text{Fig 3. } \frac{\textcircled{1}}{111} = \frac{1}{3} \quad 3$$

$$\frac{\textcircled{1}}{1111} = \frac{1}{34}$$

$$\frac{\textcircled{1}}{11111} = \frac{1}{346}$$



The exception mentioned above is $\frac{2}{3}$, which plays a large part in the mathematical work. The Egyptian could write down $\frac{2}{3}$ of any quantity without calculation. He may have had tables, but none have yet been discovered.

¹ In the following, when fractions are thus placed together, they are to be added.

Fractions were expressed by writing the symbols for the denominator under the consonantal sign “r,” originally “the mouth,” which came to have the meaning of “part.” (See Fig. 3.)

As mentioned already (with the exception of $\frac{2}{3}$), the Egyptian could not deal with such fractions as $\frac{7}{8}$. He realized it was seven times $\frac{1}{8}$, but he preferred to express it as $\frac{1}{2} + \frac{1}{4} + \frac{1}{8}$. This brings us to a very important fact—that any fraction can be expressed as the sum of two or more fractions. This may be done in many different ways, e.g. :—

$$\begin{aligned}\frac{2}{3} &= \frac{1}{2} + \frac{1}{6} \\ &= \frac{1}{3} + \frac{1}{4} + \frac{1}{12} \\ &= \frac{1}{2} + \frac{1}{8} + \frac{1}{24} \text{ and so on.}\end{aligned}$$

This is illustrated graphically in Fig. 4.

The Egyptians knew of this and made great use of such “root-fractions.” Tables of them have been found, and they existed down to Coptic times. Hero, the Greek mathematician, made use of them in the same way as the Egyptians.

A table in the papyrus gives the result of dividing 2 by odd numbers from 3 to 99, e.g. :—

$$\frac{2}{25} = \frac{1}{24} + \frac{1}{54} + \frac{1}{174} + \frac{1}{342}.$$

This fractional system held the Egyptian fast in its grip from the earliest period. There are, however, some indications that “mixed fractions” were dimly understood in a limited fashion, but even when their use had become common among the Greeks, the ordinary folk still held to the cumbrous methods illustrated above.

A little consideration will make it clear how these very cumbrous methods originated and were necessary in practical problems of division of food and other commodities.

Suppose that five loaves are to be divided equally among six people. The primitive method is as follows :—

- (a) Divide each in half. Give half a loaf to each person. Two loaves remain.
- (b) Divide these two loaves in quarters. Give one quarter to each person. Two quarters remain over.
- (c) Divide each of these quarters in thirds. There are six parts, one for each person.

Thus each person has received $\frac{1}{2} + \frac{1}{4} + \frac{1}{12}$ of a loaf.¹ In Fig. 5 this is illustrated graphically and the shares of each of the six persons are numbered correspondingly.

The following is one of several examples from our Papyrus, and deals with the division of nine loaves among ten persons :—

“The making of nine loaves for ten persons. Do thou count it $\frac{2}{3}, \frac{1}{5}, \frac{1}{30}$, ten times.”

Here the answer is given: the share of each is $\frac{2}{3}, \frac{1}{5}, \frac{1}{30}$ —and the proof is set out as follows :—

“(a)	$\frac{2}{3}$	$\frac{1}{5}$	$\frac{1}{30}$
(b)	*	..	$1\frac{2}{3}$ $\frac{1}{10}$ $\frac{1}{30}$
(c)	*	4·	$3\frac{1}{2}$ $\frac{1}{10}$
(d)	*	8	$7\frac{1}{5}$
(e) Together 9 loaves.”			

¹ Professor Petrie points out that the proceeds of sale values are divided among crews of Scotch fishing boats, in precisely the same manner.

Line (a) is first multiplied by 2,

$$\begin{array}{r} 1\frac{1}{3} \quad \frac{2}{5} \quad \frac{1}{15} \\ \text{but } \frac{2}{5} = \frac{1}{3} + \frac{1}{15} \text{ and } \frac{2}{15} = \frac{1}{10} + \frac{1}{30}; \end{array}$$

thus we get line (b), which is multiplied by 2,

$$\begin{array}{r} 3\frac{1}{3} \quad \frac{1}{5} \quad \frac{1}{15} \\ \text{but } \frac{1}{3} + \frac{1}{15} = \frac{2}{5} \text{ and } \frac{2}{5} = \frac{1}{2} + \frac{1}{10}; \end{array}$$

thus we have line (c), which is multiplied by 2, giving (d). Adding lines (b) and (d) we have

$$1\frac{2}{3} + \frac{1}{10} + \frac{1}{30} + 7 + \frac{1}{5} = 9 \text{ loaves.}$$

Other examples provide for double allowances of food for the chief officials.

The only example of a common rule deals with the multiplication of fractions :—

“ Making of $\frac{2}{3}$ of a fraction, according as it is said to thee, what is $\frac{2}{3} \times \frac{1}{5}$.

Make thou its double, its six times, that is its $\frac{2}{3}$. ”

Evidently the denominators, not the fractions, must be multiplied, thus :—

$$\frac{2}{3} \times \frac{1}{5} = \frac{1}{2 \cdot 5} + \frac{1}{6 \cdot 5} = \frac{1}{10} + \frac{1}{30}$$

The reason is obvious, since $\frac{2}{3} = \frac{1}{2} + \frac{1}{6}$.

The solution of simple equations of the form $y + \frac{y}{7} = 19$ was effected by the use of root-fractions, in the following way :—

To 7 is added its $\frac{1}{7}$ part. The result is 8. 19 is then divided by 8 (in Egyptian fashion), and the quotient $2\frac{1}{4}\frac{1}{8}$ is multiplied by 7 to obtain the answer $16\frac{1}{2}\frac{1}{8}$. The steps of the process correspond exactly to the modern solution :—

$$\begin{aligned} \frac{8y}{7} &= 19 \\ y &= \frac{19}{8} \times 7 \\ &= 16\frac{5}{8}. \end{aligned}$$

In some problems we get a glimpse of higher knowledge such as Arithmetical or Geometrical Progression. The following is an example :—

“ Divide 100 loaves among five persons, $\frac{1}{7}$ of the shares of the first three being equal to the shares of the rest.”

The “ working out ” shows that it is assumed that the shares are assumed to be in Arithmetical Progression.

“ Proceed as follows. The difference is $5\frac{1}{2}$. ”

Then taking the share of the last person as unity, the scribe writes down the other shares. Finding that the sum is 60, he proceeds to increase each amount by $\frac{2}{3}$ and checks the results by adding to 100.

The question arises, how did he obtain the “ common difference $5\frac{1}{2}$, ” which would in these days be found thus :—

With the usual notation,

$$(4d + a) + (3d + a) + (2d + a) = 7(d + a + a)$$

whence $d = 5\frac{1}{2}a$.

Either tables were referred to, or use was made of a formula similar to the modern one.

Other examples of Arithmetical Progression occur in the papyrus.

In the Moscow Papyrus there is an example of a problem on the Volume of a Truncated Pyramid. This is of particular interest as it indicates a direct application of the modern formula :—

$$\text{Volume} = \frac{\text{height}}{3} \times (\text{sum of areas of top and base} + \sqrt{\text{product of areas}}).$$

The top and base are squares and the last term is obtained directly by multiplying the sides of top and base together.

This problem is not to be found in Euclid.

The Geometrical Section of the Rhind Papyrus is full of gross errors, due probably to the copyists, who often did not in the least understand what they were writing about.

However, it is clear that the Egyptians knew that the area of a rectangular field was to be obtained by multiplying the length by the breadth. In the case of the triangular field an error was introduced by taking the length of a slant side for what we now term the "perpendicular height."

An extremely interesting example is the earliest known attempt to "square the circle." A rough diagram shows a circle—which is evidently meant to be a circle of equal area. Inside is marked the diameter.

The working indicates that the area of the circle is $\frac{6}{5}\frac{1}{4} \times (\text{diameter})^2$, and the following empirical rule was in use :—

"Subtract $\frac{1}{4}$ from the diameter and square the result."

This gives a value for π (ratio of circumference to diameter) of $3\cdot1605\dots$

The Pyramid calculations indicate how the measurements of the pyramid slopes were reckoned. The quantity called the "*seyed*" gave a measure of the slope of the pyramid-face away from the vertical, and was equal to the number of spans displacement per cubit of height. A cubit was equal to 7 spans.

Thus in the case of a 4 : 3 pyramid (Fig. 6),

$$\begin{aligned} \text{the } \textit{seyed} &= \frac{21 \text{ spans}}{4 \text{ cubits}} \\ &= 5\frac{1}{4}. \end{aligned}$$

There are indications, too, that the Egyptians knew that if the sides of a triangle are proportional to 3, 4 and 5 (or to 20, 21 and 29) the triangle is right-angled.

One instance of Geometrical Progression occurs. The powers of 7 are set down in order up to the fifth power, and the sum is obtained by multiplication. A second calculation, however, starts with the number 2801, which is then multiplied by 2 and 4 in succession in Egyptian fashion to obtain 7×2801 . This gives the same result as before.

With the usual notation,

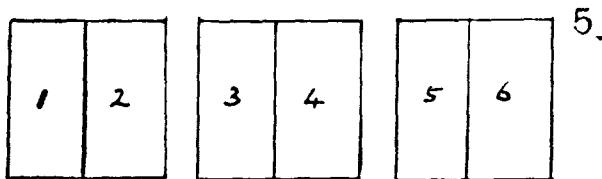
$$\begin{aligned} s &= \frac{1r - a}{r - a} = \frac{a(1 - r)}{a - 1}, \text{ when } r = a \text{ as in this case,} \\ &= 7 \times \frac{16806}{6} = 7 \times 2801. \end{aligned}$$

Now by some means or other the Egyptian knew how to obtain the number 2801 in order to check his result.

It is necessary to emphasize again the fact that our knowledge is derived from isolated mathematical fragments. Of the really great mathematical minds

among the ancient Egyptians we know nothing. Yet there must have been some who, like their Greek successors, studied the subject for its own sake and whose work gave so great an impetus to learning.

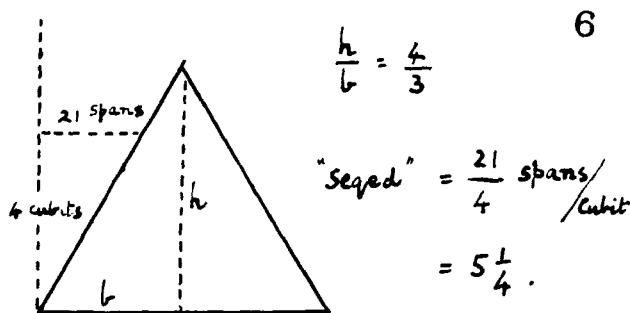
Speaking generally, the Egyptian appears to have regarded the subject from a strictly utilitarian standpoint in order to meet the needs of his everyday life.



1	2
4	5

3	1	2	3
6	4	5	6

$$\frac{1}{2} + \frac{1}{4} + \frac{1}{12} = \frac{5}{6}$$



It is, however, not too much to hope that more complete papyri in the nature of mathematical textbooks may yet be discovered. Such works must have existed and Pythagoras alludes to them.

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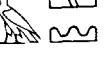
Griffith, *Hieratic Papyri from Kahun and Gurob*, p. 15.

PERIODICALS.



Recueil de Travaux, XXXVIII, 3, 4.

MASPERO, C.—*Introduction à l'étude de la Phonétique Égyptienne* (resumed from 1917, p. 83, of this Journal). This deals first with the Greek equivalents of . It is represented by A in a large number of words, as Amenti, Amen and its compounds, *anok*, Anup, Alexandros, Arsinoe and others. It appears as E in a few words; as H in others; as I in *iri*, Inaros, Imuthis, Isis; as O or U in Osiris, Onuris and On. In the xviiith dynasty is initial A as Amen, Assur, Arvad, Akhsaf, Apki; also as medial A in Amen Appa. The passage into O later is seen in Arunta (Syrian), becoming Orontes (Gr.); like the change in English of All into ôl as pronounced.

 in the xixth dynasty changes with . Many words in Pyramid Texts beginning with  begin with  or with  in later times. There is no example of initial  in cuneiform renderings; in Greek it is regularly A. In medial positions it is always A, and does not change with . It sometimes passes in Greek and Coptic into ε, η, ι, ου, ο, ω. In Greek names medial  is α, ε, η, ο. The transfer to U is seen in  KASHA = KUSHU, Assyrian. It passes into o in Coptic.

 in early times changes with ; and this double vowel for the guttural is like writing Aali for Ali. In Coptic it is rendered by every one of the vowels. In Greek it is A, rarely E or O. In Semitic it is U or A (Assyrian). In Hebrew it is 'ayin. The cuneiform always has A for terminal place, as in *riya* for . The rendering of 'ayin into Egyptian is  or  usually in the xviiith dynasty, but also  as in Singara and Gaza (*Khazatu*, Assyr.), and as   in Anab and  in Anath, in which it varies between 'ayin and aleph in the Phoenician.

The few instances of Semitic names in the xith dynasty give  as aleph in Absha (initial) and 'Amu-ansha (final). The conclusion is that it had the value A originally; and as the Latin A has become every other vowel in different

words in French, and in English A has quite different values in father, man, what, all, leopard, name, so the original A passed into every other vowel by Coptic times, though it is more usually A than any other vowel. The proved change of A into O and U in proper names between the xviiith dynasty and Greek times confirms this. The group  was to represent 'ayin, like writing Aali for Ali.  was  + , modifying it like English ee in *see*, *need*, *eel*. As initial it was partly a diphthong, but as medial and final it was usually a vowel, varying between E and I according to dialects.

This is the last paper that Maspero wrote, and there are not even notes to show what else he intended; but it is of great value as a practical study of facts irrespective of theories. In face of these facts Akhenaten has now been spelt with E, I and O initial in Germany. The search for vocalisation is a vain quest for a permanent transliteration, and such is imperatively needed for Egyptian.

DARESSY, G.—*Un second exemplaire du décret de l'an XXIII de Ptolémée Épiphane.* The first example of this decree was published in *Rec.*, xxxiii, p. 1. The present example, found at Asfun, is in sandstone much worn away, and scarcely supplements the gaps in the previous copy. The name of the father of the canephoros of Arsinoe is corrected to Persomedos.

CHASSINAT, E.—*A propos d'un passage de la stèle No. 8438 du Musée de Berlin.* This stele records a building in Pharbaethos, of the 51st year of Psemthek I, by Paderpos, son of Padasmataui. The sense of the text has been disputed, and here it is proposed to read it, "I built the house (or temple) of Qed-nezes of the temple of Hermerti Osiris in Remehet"; the word Qed-nezes being looked on as an epithet of Horus, like Qed-hou, "constructor of the body" of Osiris, which again is like Khnum the modeller.

DÉVAUD, É.—*Un signe hiératique peu connu.* This is two parallel slanting strokes: these appear to be used for a duplication of the single-stroke sign of abbreviation, and may replace the eyebrows, jaws, uraei, lion heads, feathers, wings and other signs.

DÉVAUD, E.—*Le Conte du Naufrage.* A discussion of grammatical details of expression, which do not materially affect the sense.

CHASSINAT, E.—*Gaston Maspero.* This is a full picture of the activities of the great French master, by a devoted pupil who writes with a warm feeling of his sympathy and helpfulness.

Tome XXXIX.

NAVILLE, E.—*L'Auxiliare* . This is similar to English *do*, as beside being a simple infinitive it comes in such phrases as "do send me this book," or "the watching which I have to do." [Note also the English parallel "Where are you *making* for?"] It has no form of past, present or future, which are all expressed by particles and auxiliaries. After a detailed discussion of many passages it is concluded that the auxiliary  expresses mainly the relation of time, as "when," the time in which an event happened or a matter was done.

JÉQUIER, G.—*Moulins funéraires*. The placing of corn-grinder stones in graves is here said to be frequent in prehistoric times ; but the references given are to a kitchen-midden of De Morgan, to xiith dynasty pan-graves at Diospolis and one stone at Mahasna, apparently the only instance, as another stone there is merely a rough fragment. The millstones with servants grinding, in the ivth–xth dynasties, are not model stones for the dead to use. So it seems doubtful if there is a real prototype of the figures of the high priest of Memphis grinding corn before Ptah, except as a servant of Ptah. The two alabaster blocks with lion figures at the side, found at Memphis, called “ libation tables ” (Cairo, 63–64), are claimed as representing corn-grinder blocks. [Since this paper, similar blocks with lion figures were found, of the xixth dynasty, in a tomb at Sedment.] Another sloping block resting on two crouched lions is of the vth dynasty from Abusir.

Origine de la coiffure Nemes.—This paper agrees with Dr. Capart's view that the *nemes* is the cloth covering the wig.

Quelques passages de Sinouhit.—Some passages are here discussed, and the words *ua* and *mest-pet* are identified as the anthropoid coffin and the sarcophagus. The *kherp* sceptre had various other names, as *obă*, *hu*, *aăt* and *sekhem*.

DÉVAUD, E.—*Deux mots mal lus*. One hieratic sign is used for two words, “ baker ” and a mineral, and has been supposed to be the nose, *khenti*. Here the evidence is given for the first sense “ baker ” to be the known word *retehti* ; and the second *seti* for the mineral, which was used as paint, and has been guessed to be green, red, yellow and clay by different translators. It was imported from Nubia and in jars, so M. Dévaud would render it “ Nubian earth ” ; and he adheres to the view that the  sign is a bow.

SPELEERS, LOUIS.—*Un papyrus funéraire de basse époque*. This is a charm on a papyrus 8 by 7 inches, with one line on the back, visible when it is rolled up. It is one of the type of “ writing that my name may flourish,” or “ endure ” as is here proposed. The text consists of some ideas from common sources, developed according to the taste of the time. It reads : “ Words spoken by — true voiced, born of Asgertet, true voiced, ‘ I am Ra at his rising, I am Atmu (at his setting), I am Osiris Khentamentet, the great god, lord of the East [read rather *Abdu*, Abydos]. Grant me your attention O ! guardians of the Duat, open to me (the gates of heaven and earth). Receive this good — O ! guardians of the hall of the two Maots who guard the (bull of the Duat). O ! Anubis in Ut, I am one of the guardians who watch for Osiris. Take pure water of Osiris, fresh water for thee, water from Elephantine, milk from Athribis . . . one brings to thee a jar full of drink offering. Receive fresh water of the temple of Ra . . . of Mehen. May thy *ba* go forth to follow the God. He will not reject thee from heaven or from earth . . . thou sittest as a prince unto the end. Thou art great ; thou shalt appear at Busiris, established is thy dwelling. . . . To thee (are given) the rays of the Sun, the pure flow of the jar of drink offering . . . in the midst of Dendera, thy flesh rejoiceth, thou art united to . . . thou art before the East. Receive for thee water from the altar of Thesduat at Heliopolis. (I am) the breath of Amen, and the water of the Nile. I am thus eternally.’ ” On the outside is written, “ An effectual phylactery. May it remain on thy bones and rest on thy flesh, without being destroyed.”

BLACKMAN, A. W.—*Sacramental ideas and usages in ancient Egypt.* At Heliopolis Ra was regarded as being purified by water before the sun rose, and the high-priest performed the washing of the image of Ra daily. The high-priest in prehistoric time “was of course the King of Heliopolis.” Therefore the king had to be purified daily by priests acting as Horus and Thoth, otherwise Horus and Set. The pool from which the water was taken was identified with Nun, the primaeva ocean, from which the sun-god was born. [This suggests that the worship arose on the coast, where the sun was seen to rise over the Red Sea] After that the king was purified by incense and natron mouth-wash. He was then robed and bore insignia. The same course of ceremony was applied to the Ra image. At the king’s death the body was to be similarly prepared for its admission to the company of Ra.

In the Osiris system the dead god was likewise washed, and this revivified the corpse, which was otherwise stated to be revived by eating the eye of Horus. [But the passage of the Pyramid Texts quoted to show the washing, never mentions it, but is concerned with purification by disincarnation : “Unite to thee thy bones, take to thee thy head,” after the skeleton had been dissevered and stripped. The different modes of purification must be carefully distinguished. Again in the sixteenth dynasty the same idea remained : “May Anubis attach for thee thy head to thy bones. Mayest thou be purified . . . in the presence of Horus and Set.” Such passages should not be misquoted as referring to washing a corpse.]

Various examples are then illustrated of the lustration of a deceased person, figured in tombs. As these actors are funerary officials, and not gods, it implies that this indicates the actual purifying of the body, and not a moral purification by deities. This purification as applied to the dead Osiris is linked with the inundation covering the fertile land, which is the same as Osiris, as the god from whom vegetation springs up. Various other connections of ideas naturally arose, as that the water was from the pure caverns of the Nile, that it represented the vital fluid of Osiris, or that it was from the Pools of Life ; the Egyptian was capable of interminable permutation of ideas. The use of solar formulae in Osirian ceremony may suggest that the lustration is first solar ; but the priority of Ra or Osiris is a very complex subject, probably to be solved by their both being immemorial gods of different races coming from east and west.

CHASSINAT, E.—*Un type d’étalon monétaire sous l’ancien empire.* This deals with the well-known sale of a house in the ivth dynasty, published by M. Sottas. The house is valued at 10  shot had been taken as a measure of cakes, from the usual word *shout*, cake. But examples are here quoted from the xviiith dynasty of values in  shot ; and in one case 16 *shot* + 1 *deben* totals as 2 *deben* 4 ? *shot*, implying that 12 *shot* was equal to a *deben*. In any case, it was a standard of value. Here the subject is left : but we may ask why is this standard of 1/12th of a *deben* ? The *qedet* was well known as 1/10th of a *deben*, and therefore this is not likely to be another name for 1/10th. It looks like the leaf-shaped arrow-head, but that was unknown in metal in the ivth dynasty, and only approached in the xith ; and it is too heavy for a flint arrow-head, nor could that be made of regular weight. The 1/12th of a very heavy *deben* would be a light value for the Babylonian shekel ($152 \div 12 = 12\cdot7$).

The phrase *em uzeb* is rendered by "in exchange" or "replacement," which would be a general term for barter, agreeing with *uzeb*, "to turn round." It was certainly usual in later times to state values of all kinds of goods in weights of copper, just as the Romans did before silver coin became usual. A list in the papyrus Mallet is quoted, also the supply of 50 *deben* of copper for the house-keeping at the Ramesseum, and we may add the list of values in the tomb robberies under Ramessu X, all stating weights of copper.

CHASSINAT, E.—*Sur quelques passages du De Iside et Osiride de Plutarque.* The statement that Horus was born "feeble in his legs" is traced to the form of the hieroglyph in the name  . The fish, as an emblem of hatred, is the fish *betu*, and *betu*, to execrate or hate, has the fish determinative. The accusation by Set against the legitimacy of Horus is confirmed by passages where Isis states his posthumous conception. The story that Isis allowed Set to escape, Horus in wrath tore her royal head-dress off and Thoth replaced it by a bull's head, is found at length in the Sallier papyrus IV. The mutilation of Set by Horus, stated to be represented at Koptos, is a misunderstanding of the usual figure of Min. The pig is stated to have been unclean, but sacrificed and eaten at full moon because Set, chasing a pig by moonlight, found the coffin of Osiris. The sacrifice of a pig is named among offerings at Edfu.

CHASSINAT, E.—*Fragment des Actes de l'Apa Nahroou.* One leaf of parchment; a fellow leaf is in Cairo Museum.

JÉQUIER, G.—*Le Monde à l'envers et le monde souterrain.* In the xcixth chapter of the Book of the Dead is described "that evil world where the stars fall upside down on their faces and know not how to raise themselves." While the astronomical scenes treat the invisible heaven like the visible, the commoner view was that some subterranean passage served to pass from west to east; or an animal with two heads, double lion, double bull or double sphinx, which swallowed on the west and disgorged at the east. Lastly, the passage became divided into hours, with successive gates and monstrous guardians.

GUNN, BATTISCOMBE.—*The Egyptian for "Short."* The ignorance about the equivalents for many of the commonest ideas is remarked; and it is proposed that the word  is to be rendered as "short," as in several passages quoted it is in opposition to "long."

"To have recourse to" is proposed as the rendering of  illustrated by several passages.

A note on the verb WRŚ proposes that it is not only "to spend the day time," but that it implies the whole time, and *szz* means similarly the whole night. The sense is that of continuous occupation.

CHASSINAT, E.—*Note sur deux scarabées.* A splendid scarab of lazuli, 4 inches long, is inscribed with *nesut da hetep* for the chief of the royal caravan Pedatnubt. Another scarab, 2 inches long, in schist, has eight columns of inscription naming tribute brought by the chiefs of Naharin to Tehutmes IV, who "smites the lands from Naharni to Kary," from north to south. This is interesting as the forerunner of the large historical scarabs of Amenhetep III.

TOURAIEFF, B.—*Les pertes récentes de l'orientalisme en Russie.* “Our unhappy land, where they destroy with so much zeal the acquisitions of civilization, has lost in the recent months many of its eminent orientalists. Nikolsky, Saleman, Radloff, Wesselowsky, Chukowsky, de Lemm, are no more.” To these we must now add the name of Turaieff himself, a victim since writing this dirge : “The death of the greater part of these scholars has been hastened by the terrible events which unfold themselves here.” A short biography of Nikolsky and Oscar de Lemm is given.

SPELEERS, L.—*La stèle de Mai.* This Moiy was scribe of offerings to all the gods in the temple of Sety I at Abydos, son of a chief of archers, Bes, and Urmur. The stele shows Sety I receiving life from Osiris, with his chief son (*tep*) Rameses behind him bearing a feather fan, without a cartouche. This proves that the eldest son was already dead, and that Rameses was recognised as chief son in Sety’s lifetime. The hymn to Osiris, in fourteen long columns, is completely set interlinear with the parallel copies I and II of the Middle Kingdom, III-V of New Kingdom and chap. 181 of the Book of the Dead, with a full translation. This will be the standard text for the future. There are also many notes and a statement of the position and functions of all the gods named, with references for every point, a very valuable key to authorities in mythology.

JÉQUIER, G.—*Le préfixe  dans les noms d’objets du Moyen Empire.* The conclusions are that most words beginning with *m* are compounds formed of a verbal or substantive radical, with preposition *m* in the usual sense of *for*, *in*, *of*. Some words with *men* are whole radicals. The preposition *m* may be compounded with the following letter in one sign, as in *men* and *mes*. Before a strong guttural, *k* or *q*, *m* is followed by *n* or *o* for euphony. The examples, for instance, are *m·onkht*, an amulet, “for life,” *m·neferti* “for beauty,” *men·qebyt* “for refreshing,” *m·den·khes* “for (making) to cut the razor,” the hone.

DÉVAUD, E.—*Étymologies Coptes.* A paper on thirty-eight Coptic words.

GAUTHIER, H.—*Les “Fils royaux de Kouch” et le personnel administratif de l’Éthiopie.* This paper completes the account of the Ethiopian viceroys given in the list by Dr. Reisner. The title “royal son” does not mean an actual son of the king, but is a title of the viceroy ; there are other “royal sons” of Nekhebt, Thinis, Amon, etc. The royal sons of Rameses are probably descendants. The viceroys were almost always in intimate contact with the king, before their acting as deputies. Their functions were solely civil, and not military. The names given are : Aohmes-sā-Tayt, about 1570 B.C. ; his son Aohmes-Tura, 1555–1538 ; Sen, 1537–1486 ? ; Nehy, 1486–1449 ; Usersetet, 1449–1423 onward ; Amenhetep, 1423–1409 (or less at each end) ; Mermes, 1409 or earlier–1375 ? ; Tehutmes, 1375 ?–1350 ? ; Huy, 1350 ?–1335 ? ; Pasar I, 1335 ?–1325 ? ; Amenemapt, 1325 ?–1299 ? ; Any, 1299 ?–1297 ? ; Heq-nekhtu, 1297 ?–1280 ? ; Pasar II, 1280 ?–1262 ; Setau, 1262 or earlier–1237 or later ; Messuy, 1237 or later–1214 ; Sety, 1214–1209 ; Hera I, 1209–1180 ? ; Hera II, 1180 ?–1170 ? ; Pasar III, 1170 ?–1160 ? ; Un·ta·uat, 1160 ?–1155 ; Rameses-nekht, 1155–1130 ? ; Panehsy, 1130 ?–1110 ? ; Her hor, 1110 ?–1102 ; Pionkh, 1102–1080 ? ; Nesikhensu, 1020 ?–1006 ; Uasarken·onkh, about 850. Various other officials and lieutenants of Kush are discussed, for which the paper should be studied.

REVIEWS.

La Religion d'Israël. By RICHARD KREGLINGER. Sm. 8vo, 335 pp. 1922.
(Bruxelles, Lamertin.)

This is another volume of the series which was noticed in this journal in 1920, p. 57. The first work dealt with principles admirably ; here, in the application of them to a very complex and debatable case, there is naturally much more scope for temperament. The author begins with the dating of the sources of the Old Testament ; he would place the final revision of the Hexateuch to the age of Malachi, while taking portions of it as being of the two or three generations after Solomon. These dates seem impossibly late, when we look at the general historical style. He agrees to the date of the earlier part of Isaiah, but what a gulf of style there is from that to the book of Samuel ; then again, what a gulf between that and the opening of Exodus ; again an immense difference between the business-like style of Exodus and the poetic style of Genesis. Can all these great changes be pushed through in two centuries of a uniform kingdom ? It looks far more like the five centuries back to Exodus, with large differences affecting the nation in the interval. There may have been small editing, but the bulk of the documents seem to require something very near their face value in dating. Again, if large changes were as late as after the return from exile, could they ever have been enforced on all the Jews who had been scattered in Egypt and elsewhere at the exile ? The accepted body of writings must be pre-exilic, except those which were new history, as Ezra and later works. In other respects Prof. Kreglinger sets his face against the extravagances of Cheyne and others, and keeps to a quiet and sane judgment.

The literary point of view seems to override the archaeology when we read, " La critique biblique est essentialement littéraire ; elle recherche la date d'un texte ; mais non point celle où les idées que ce texte exprime furent pour la première fois enseignées, verbalement ou par écrit." The archaeologist thinks of facts before the expression of them ; criticism must begin with the credibility of statements and their relation to known facts.

The various races and factors that enter into the complex formation of Israelite ideas are then discussed. There is the Troglodyte, as at Gezer, with his sacred caves (kept up still at the Haram and Bethlehem), the pig sacrifice, cave paintings as in Europe, and Neolithic work. Next the Canaanite Semites who burnt the dead and sacrificed the first-born. Here the author parts with the old view of their home being in Arabia, and recognizes the early Semite in North Syria and Babylonia, whence he spread to Assyria. This view, lately enforced

by Prof. Clay, is strongly supported by the North Syrian invasion of Egypt in the VIIth dynasty. A remarkable detail of human sacrifice, at the foundation of building, is the burial of parts of bodies at Gezer; similarly at the Labyrinth at Hawara, part of a man's body and a woman's body, cut in three, were found in the sand-bed beneath the corners of a building (*Labyrinth*, 33-4).

Next the Babylonian influence is considered, and the dynasty of Hammurabi is called Amorite. Tablets of his age name Yau-ilu, or Yahveh is god, centuries before Moses. The Babylonian Ishtar appeared as Ashtoreth in Palestine, and repelled some but attracted other Israelites. The Egyptian influence is first quoted in Sinai under Zeser, but it was as old as the Ist dynasty under Semerkhet. There are statements here which show the unfortunate habit of reading more in a text than is there: "La pratique de la circoncision dont les Israélites croyaient, peut-être à tort, que c'est en Egypte qu'ils l'avaient adoptée," with reference to Jos. v, 2. There is no such belief, only the statement that the generation which left Egypt had died off. Then the winged disc is said to ornament the high-priest's dress, with reference to Ex. xxviii; there is no trace of any such ornament suggested. On p. 75 it is said that David set up a stone on the threshing-floor of Araunah, to connect this with the worship of sacred stones; but it is really stated that he built an altar and sacrificed. On p. 87 the brazen serpent is said to have had prodigious powers in the rout of Amalek; it is never alluded to in that account. Further, all the temples were guarded by a serpent; there is no trace of that in Palestine. The facile statements, for which references are quoted, have no support in those references; this "reading in" is too common a habit with biblical critics.

The references to Asher under Tehutmes III and Sety I; to Samnu under Tehutmes III, and Samhuna under Amenhetep IV, as Simeon; to the well-known Yakub-el and Yusef-el, are quoted as reasonable. Also the Khabiri and the Aperi are both accepted as 'Abri, Hebrews, though one can imagine some hard things being said if anyone but a critic equated '*ain* and *cheth*. The account of Deborah is accepted, and not theorised away as has been the fashion. The usual word *shaqatz* for an abomination is read here as *tabu*; but that distinct sense is not applicable in Ps. xxii, 24: "For he (the Lord) hath not despised nor tabued the affliction of the afflicted"; the simple "abominated" or "abhorred" is a far better rendering.

A proposal which is attractive is that there were four codes of different sanctuaries recorded. After the recognized code of Ex. xx. at Sinai there was the law attributed to the second tables, of which ten commands are in Ex. xxxiv, 14-26; there was the form of ten commands at Mount Pisgah, Deut. v. 6-21, which might belong to the sanctuary of Beth Peor beneath that; and there was the code of 12 commands at Mount Shechem, connected with Baal-berith, the Lord of the Covenant.

There are many interesting suggestions under Magic, Mimetic rites, Vegetation rites, the Prophets and their functions as against mere ceremonial, the influence of Persian views of Dualism and the hierarchy of angels, and the function of intermediaries. There seems rather too mechanical a view of all these various parts, too German an air of analysis—a lack of the sympathetic realisation which is essential to anyone dealing with aspirations. In even the most mistaken devotion one may write of it from the worshipper's point of view, if it is to be really understood in its bearing on life, or its implications. One must be all things to all men if one is to understand their minds.

Die Plastik der Agypter.—By HEDWIG FECHHEIMER. Sm. 4to. 59 pp., 168 pls. (Cassirer, Berlin.) 1920.

This popular book is of value to students as giving many large photographs

of sculptures in Berlin which are not published or collected together elsewhere. We may note the remarkable sharp profile of Amenemhat III (53), the strange head (54-56); the queen with high cheek-bones and massive hair, like the Galla and El Kab sphinx type (57, 58). The group of Amarna heads (79-93) is welcome, pending a publication of the German excavations. The aspect of the profiles is greatly altered by the wrong positions given; the facial slope has been sacrificed to keep the neck more upright: what the true position should be is proved by the Louvre bust (86) which places the brow and chin in a vertical plane. Some heads (as 83) are tilted up 18° skew. The same error is seen in the hawk head (45) repeated on the cover. The figure 115 is not from Medium; by the name it is probably from Saqqara. The German is discreetly silent as to the price of the book, so as to get whatever he can.

QUEEN OF GALLA TYPE.

On the Physical Effects of Consanguineous Marriages in the Royal Families of Ancient Egypt. By the late Sir M. A. RUFFER. 8vo, 46 pp., 27 figs. 1920. ("Proc. Royal Soc. Medicine," Vol. xii.)

This paper puts in shape the family histories of the XVIII-XIXth dynasty and the Ptolemies. The genealogy of the XVIIIth dynasty shows that each of six generations married a half-brother except Amenhetep I, who was a full brother; and the last three married Syrian princesses, probably of Egyptian descent. Certainly these latter marriages did not improve the family vitality, and there is very little to show of any bad effects in the six related generations. In the XIXth dynasty there was closest in-breeding for three generations without any obvious ill effects. It is rather hard to write of Ramessu II as being completely bald; he had a fair fringe of hair left when he died at 77 at least, or more probably 85. In the XXVth dynasty the Ethiopians followed half-sister marriage. In the Ptolemies full sister marriage was usual. The physical condition does not seem to have been much affected, but there seems to have been a moral deterioration, even for that bloodthirsty age. The main point which is pressed is that there was no deaf-mutism or congenital disease, which is usually attributed to such marriages. In modern times it may well be that certain weaknesses of structure tend to draw together, from unconscious sympathy and a sense of difference from the average world; in short, the in-breeding is a result of the weakness, and not a cause of it. Nature does the right thing by pooling such stocks to their extermination.

NOTES AND NEWS.

The great event of recent weeks has been the opening of the tomb of Tut-onkh·amen. It will always occupy the first place in public imagination, as making the world familiar with the magnificence of the Egyptian monarchy. The existence of such kind of objects has hitherto only been imagined by those who were familiar with the monumental representations ; now all the world will realise the sumptuous display of the "Great House." The art will also impress the public with the ability shown, though it will not surprise those who knew the fine work of the tomb of Yuua, or the still finer style of earlier times. The taste shown in the alabaster vases, made in one with the stands, and overloaded with elaborate handles, differs much from the simpler beauty and more graceful designs of previous epochs.

As for history, we cannot hope for much from a tomb, unless the king took with him a justification to the gods, like the great papyrus of Ramessu III. But a most interesting historical link is seen in the strange animal-headed couches. The cow-head couch has spotting inlaid on it of a trefoil form ; this is foreign to Egypt, but is well-known in Mesopotamia, as on the couchant bull in the Louvre. The weird dog-head of another couch is also entirely un-Egyptian. Now, as Kallimasin, king of Babylonia, sent to Amenhetep III a couch of *ushu* wood, ivory and gold, with three couches and six thrones of *ushu* wood and gold, it is certain that there were Babylonian couches in the Theban palace ; and this description of ivory and gold refers to the dog head with ivory teeth and tongue, while the other couches are of wood and gold only. Later than Amenhetep III, Syria was too much disturbed, and Egyptian prestige in Mesopotamia was too slight, for such presents to be sent. They must be as old as Amenhetep III, and there seems no doubt that these are the very furniture described in the Amarna letter. In accordance with this, we find that each was constructed in four parts, with bronze jointing to fit together. Furniture made in Egypt is naturally all united in one, with fixed joints. But for a rough land journey of over a thousand miles, it was needful to make couches with separate sides, frame and base, in order to pack and transport them.

No doubt there was an imitation of Egyptian motives, as in the Hathor cow-heads, and the tails copied from lion couches. This only shows that they were made for presents to Egypt, and not that they were the work of foreigners in Egypt, because there would be no purpose in the elaborate bronze jointing, instead of solid joints. This detail would not be necessary if they were merely moved about the palace or put on a Nile boat. We see then, for the first time, court furniture of Babylon, and it will be of great interest to examine the technical details of the construction and compare it with Egyptian work. The short form of the couches shows that the Babylonian slept contracted, like the prehistoric people, while the Egyptian couches are all full length.

If some articles were thus of a previous generation, it is very likely that others were likewise old ; and the footstool, with nine foreigners under it, may well be that used by Amenhetep II as figured a century before. On the death of Tut-onkh-amen, who was the last legitimate king of the great family, it seems that the palace furniture was largely buried with him, as there was no heir to inherit.

Of all the Egyptian work the most informing to us will be the dress and personal detail. The colour weaving, the attachment of ornament, the construction of jewellery, will show much that is new to us. The glove has astonished people, but, as Miss Murray observes, gloves are figured in scenes, both among offerings and also worn.

The immediately urgent matter is that all these things should be preserved in the dry air of Qurneh, and not taken to the winter fogs of riverside Cairo. A large new building must be provided in any case, as the Cairo Museum is far too full to take in properly all the objects which are piled up in four chambers of the tomb. The obvious site is Qurneh, somewhere south of Deir el Bahri. There a substantial museum should be built, without any upper floor, and entirely lighted from the north. Then will come the question of the efficient publication of all this mass of objects. The Egyptian Government should begin by an appropriation of £30,000 for the museum and £20,000 for publication. They cannot grudge a few *per cent.* of the value of what has been found for them, if they get everything for nothing. No one can hope that these things will last for another three thousand years ; probably this sheen of gold will perish by ignorant greed within three hundred years. A complete photographic and coloured reproduction of every object from various points of view, and with full diagrams of details, is the least that this generation owes to the past, which has guarded its treasure till now.

BRITISH SCHOOL OF ARCHAEOLOGY IN EGYPT.

Mr. Brunton and four students have been working steadily through the remains of the great cemetery at Qau-el-Kebir ; the site seems to have been largely exhausted by native, Italian and German workings, without any record or publication of the past discoveries. A prehistoric cemetery will soon be examined, and there is much to do in copying tombs in that district. This is the only British work in Egypt this winter.

Mr. Mackay is in Mesopotamia for Oxford and American work. It is hoped that he will also clear up the history of the early civilisation in the Persian Gulf for the British School, in view of the possible connections with Egypt.

On behalf of our School also, application has been made to reserve an important site at Jerusalem. These extensions of the British School work have been caused by the intended change in the Egyptian law of antiquities, by which the Government could take everything of interest or importance from an excavator. All the British and American excavators have protested that such a change would probably stop excavation in Egypt.



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